

**American Rivers ♦ Delta Land Trust ♦ Earthjustice  
Environment America ♦ Environmental Defense Fund  
Gulf Restoration Network ♦ National Wildlife Federation  
National Audubon Society ♦ Sierra Club  
Surfrider Foundation-Central Gulf Coast Chapter**

May 5, 2008

Via Email: [ow-docket@epamail.epa.gov](mailto:ow-docket@epamail.epa.gov)

Stephen Johnson  
Administrator  
U.S. Environmental Protection Agency  
Ariel Rios Building (1101A)  
1200 Pennsylvania Ave., N.W.  
Washington, D.C. 20460

Re: Conservation Organizations Strongly Support The Proposed Clean Water Act Veto for the Yazoo Backwater Pumping Plant Project; Docket No. EPA-R04-OW-20008-0179

Dear Administrator Johnson:

American Rivers, Delta Land Trust, Earthjustice, Environment America, Environmental Defense Fund, Gulf Restoration Network, National Audubon Society, National Wildlife Federation, Sierra Club, and the Surfrider Foundation—Central Gulf Coast Chapter (collectively, the “Conservation Organizations”) submit these comments on the Proposed Determination to prohibit the use of disposal sites for dredged or fill material in connection with the construction of the Yazoo Backwater Area Project (the Yazoo Pumps). Our organizations strongly support the proposed Clean Water Act section 404(c) veto of the Yazoo Pumps, and urge you to finalize that veto as quickly as possible.

American Rivers is a national conservation organization dedicated to protecting and restoring the nation’s rivers and wetlands. American Rivers has more than 65,000 supporters nationwide, and works in partnership with thousands of river and conservation organizations.

Delta Land Trust is a non-profit conservation organization based in Madison, Mississippi. Delta Land Trust promotes sustainable economic development in the Ark-La-Miss delta by integrating timber and wildlife management into the predominantly row crop economy. Delta Land Trust uses conservation easements to protect existing bottomland hardwood forests and to restore marginal farmland and sponsors economic studies of marginal farmland. From the perspective of both the economy and the environment, Delta Land Trust advocates for a massive overhaul of the Corps of Engineers Mississippi River & Tributaries Program.

Earthjustice is a non-profit public interest law firm dedicated to protecting people and natural resources by enforcing and strengthening environmental laws; educating and involving the

public in sustaining citizen-enforced law; providing organizations, coalitions and communities with the best legal representation and related advocacy skills; and to fostering national and international recognition of a fundamental right to a healthful environment.

Environment America is a federation of state-based, citizen-funded environmental advocacy organizations. Professional staff in 23 states and Washington, D.C. combines independent research, practical ideas and advocacy to win results for the environment. Environment America, the new home of U.S. PIRG's environmental work, draws on 30 years of success in tackling environmental problems.

Environmental Defense Fund is a leading national environmental nonprofit organization, representing more than 500,000 members. Since 1967, Environmental Defense Fund has linked science, economics, law and innovative private-sector partnerships to create breakthrough solutions to the most serious environmental problems.

The Gulf Restoration Network (GRN) is a network of environmental, social justice, and citizens' groups and individuals committed to restoring the Gulf of Mexico to an ecologically and biologically sustainable condition. The GRN was formed in 1994 to raise awareness of environmental issues in Gulf States and to increase communication and coordination of member activities across the region.

The National Audubon Society is a 103-year-old non-profit conservation organization dedicated to protecting birds and other wildlife and the habitat that supports them. Our national network of community-based nature centers and chapters, scientific and educational programs, and advocacy on behalf of areas sustaining important bird populations, engage millions of people of all ages and backgrounds in conservation.

The National Wildlife Federation is the nation's largest conservation education and advocacy organization with over four million members and supporters, affiliate conservation organizations in some 47 states and territories, and which is dedicated to inspiring Americans to protect, preserve and restore wildlife, wildlife habitat and natural resources for our children's future. The Federation has a long history of active involvement with protection, restoration and wise management of our nation's precious water resources, including protection and restoration of the resources enjoyed and utilized by our members and affiliates in the Mississippi River Valley.

The Sierra Club, with 1.3 million members and supporters, is the largest grassroots environmental organization in the United States. Since 1892, the Sierra Club has been working to protect communities, wild places, and the planet itself.

The Surfrider Foundation is a grassroots, non-profit, environmental organization that works to protect our oceans, waves, and beaches. Founded in 1984, Surfrider Foundation's most important coastal environmental work is carried out by Surfrider Foundation's 60 chapters located along the

East, West, Gulf, Puerto Rican, and Hawaiian coasts. The Central Gulf Coast Chapter of the Surfrider Foundation was launched in 2007 and has members from Louisiana, Mississippi, and Alabama.

### **General Comments**

#### **The Conservation Organizations Strongly Support A Clean Water Act Veto Of The Environmentally Devastating, Antiquated, and Wasteful Yazoo Pumps**

The Yazoo Pumps project is an antiquated, obsolete, costly, and enormously destructive project that has been aptly described as the “worst of the worst” for the Corps, and “a boondoggle of the greatest magnitude.”<sup>1</sup> The Yazoo Pumps should have been decisively rejected long ago, and the Conservation Organizations applaud the Environmental Protection Agency (EPA) for initiating the veto process and urge EPA to finalize this veto as quickly as possible.

In advocating for construction of the Yazoo Pumps, the U.S. Army Corps of Engineers (Corps) has relied on an archaic 67 year old project authorization to recommend spending well over \$220 million federal tax dollars to drain and damage an astonishing 200,000 acres of ecologically significant wetlands in the heart of the Mississippi River flyway – a critical migration route for 20 percent of the nation’s duck populations. These impacts would dwarf the combined wetland impacts of all the other projects vetoed under the Clean Water Act.

The wetlands that would be drained are some of the richest natural resources in the nation, and are vital to fish and wildlife, including a host of migratory birds and waterfowl that live out much of their lives far beyond the borders of Mississippi. Drained wetlands would also include wetlands that federal taxpayers are already paying to protect on National Forest and National Wildlife Refuge lands and on lands enrolled in both the wetlands reserve and conservation reserve programs.

Although the Corps has touted the Yazoo Pumps as a vital flood protection project, in reality they would be used to drain wetlands so agribusinesses can intensify production to reap more farm subsidy payments. The Yazoo Pumps would be capable of pumping more than 6 million gallons of water a minute from one side of a Corps-built flood control structure to the other side of that structure.

Construction of this agricultural drainage project in the most sparsely populated region in the state of Mississippi would cost federal taxpayers more than \$220.1 million, and an additional \$2.1 million a year to operate and maintain for at least the next 50 years. There is no local cost sharing for this project, the entire financial burden rests on the federal taxpayers. This is a special arrangement for the Yazoo Pumps that is contrary to long-standing federal cost-sharing

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<sup>1</sup> Michael Grunwald, *Engineers of Power, Inside the Army Corps of Engineers, Working to Please Hill Commanders*, Washington Post, Sept. 11, 2000, at A1; David Quammen, *Backwater Boondoggle*, Audubon, January-February 1998, at 100 (quoting Ralph Pearce, U.S. Forest Service).

policies for flood control projects. These monies could – and should – be used to address the real needs of the region and the nation; they should not be used to destroy nationally significant wetland resources.

The Department of the Interior has concluded that the Yazoo Pumps project “will have unacceptable adverse effects on fishery areas, including spawning and breeding areas” and “unacceptable adverse effects on wildlife, specifically to the area’s breeding and migratory birds, including landbirds, shorebirds, wading birds, and waterfowl.”<sup>2</sup>

These are the very impacts that can – and should – trigger a veto of this project under Clean Water Act § 404(c). A § 404(c) veto is warranted if the project would produce an “unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas.”

### **Opposition to the Yazoo Pumps is Overwhelming**

EPA, the U.S. Fish and Wildlife Service (FWS), and the Department of the Interior have officially advised the Corps that the impacts of the Yazoo Pumps are so severe that the project must not proceed.

The scientific community strongly opposes the Yazoo Pumps. The Society of Wetland Scientists and the Association of State Wetland Managers have filed comments in support of the proposed veto. On December 10, 2007, 541 wetland and aquatic scientists and professionals, including 144 Ph.D.’s, from 46 states, the District of Columbia, and seven foreign countries wrote to EPA and the Department of the Interior urging those agencies to “take all steps necessary to prevent the destruction of vital wetlands” by the Yazoo Pumps project.<sup>3</sup>

The signers to the scientist letter have broad knowledge and expertise in wetland ecosystems, including their physical structure, chemistry, and biology. Many have written extensively on the ecology, water quality, and biota of wetlands; participated on National Academy of Sciences boards; and led national and international scientific natural resource organizations, including those involved in wetlands. Signers include, among many others, the President of the Society of

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<sup>2</sup> DOI Comments on the FSEIS at 7, 9.

<sup>3</sup> Scientists Letter opposing the Yazoo Pumps sent to Stephen Johnson, Administrator of EPA and Dirk Kempthorne, Secretary of the Interior, December 10, 2007 (hereafter, Scientists Letter Opposing the Yazoo Pumps). A copy of this letter is attached at Tab A.

Wetland Scientists, a host of highly distinguished leaders in academia, and five winners of the Environmental Law Institute's National Wetlands Award for Science Research.

The Yazoo Pumps are vehemently opposed by a host of national, regional, and state-wide environmental organizations that collectively represent millions of members and supporters nationwide. As of May 5, 2008 at least the following 117 conservation, social justice, and taxpayer organizations have opposed the Yazoo Pumps or have called on EPA to veto the project:

Alabama Environmental Council	Endangered Habitats League
Altamaha Riverkeeper	Environmental Action Committee of West Marin
American Bottom Conservancy	Environmental Defense Fund
American Rivers	Federation of Fly Fishers
Amigos Bravos	Florida Atlantic University
Amigos de Bolsa Chica	Florida Wildlife Federation
Apalachicola Riverkeeper	Friends of Blackwater Canyon
Appalachian Center for the Economy and the Environment	Friends of Milwaukee's Rivers
Arkansas Wildlife Federation	Friends of the Earth
Audubon Washington	Friends of the Kaw
Blue Planet Projects	Friends of the Rivers of Virginia
Butte Environmental Council	Friends of the Santa Clara River
Center for Constitutional Rights (MS)	Friends of the Sunflower River
Charles River Watershed Association	Georgia Wildlife Federation
Citizens Against Widening the Industrial Canal	Great Egg Harbor Watershed Association
Clean Up the River Environment	Green Valleys Association
Clean Water Action	Gulf Restoration Network
Clean Water Action, South Dakota State Office	Hackensack Riverkeeper, Inc.
Clean Water Network	Help Save the Apalachicola River Group
Columbia River Crab Fisherman's Association	Highway J Citizens Group, U.A.
Columbia Riverkeeper	Holy Cross Neighborhood Association
Concerned Parents of Leland County (MS)	Humboldt North Coast Land Trust
Conservation Council of North Carolina	Informed Choices
Cross Timbers Group, Lone Star Chapter of the Sierra Club	Izaak Walton League of America
Cry of the Water	Kansas Wildlife Federation
Defenders of Wildlife	Kentucky Resources Council
Delta Land Trust	Kentucky Waterways Alliance
Door County Environmental Council	Levees.Org
Earthjustice	Lone Tree Council
Environment America	Louisiana Environmental Action Network
Environmental Defense Fund	Lower Mississippi Riverkeeper
	Mid South Fly Fishers

Minnesota Conservation Federation  
Mississippi River Basin Alliance<sup>4</sup>  
Mississippi Wildlife Federation  
Mississippi Workers for Human Rights  
Missouri Coalition for the Environment  
NAACP Vicksburg  
National Audubon Society  
National Lawyers Guild – Environmental  
Justice Committee  
National Taxpayers Union  
National Wildlife Federation  
Natural Resources Defense Council  
Nebraska Wildlife Federation  
New York Environmental Law & Justice Project  
New York/New Jersey Baykeeper  
Northwest Environmental Advocates  
Ohio Alliance for Responsible Agriculture  
Ohio Environmental Council  
Ohio River Foundation  
Ohio Valley Environmental Coalition  
Passaic River Coalition  
People to Save the Sheyenne  
Potomac River Association  
Prairie Rivers Network  
Quadcities Citizens Against Triumph  
Raritan Riverkeeper  
Republicans for Environmental Protection  
River Alliance of Wisconsin  
River Valley Wildlife Federation  
Rivers Unlimited  
San Juan Citizens Alliance  
Satilla Riverkeeper  
Save The River  
Sierra Club  
South Branch Watershed Association  
South Carolina Coastal Conservation League  
South Dakota Wildlife Federation  
South Yuba River Citizens League  
St. Johns Riverkeeper

Surfers' Environmental Alliance  
Surfrider Foundation  
Surfrider Foundation Ventura County  
Chapter  
Surfrider Foundation Central Gulf Coast  
Chapter  
Taxpayers for Common Sense  
Tennessee Clean Water Network  
Texas Conservation Alliance  
The Green School  
The River Project  
Tip of the Mitt Watershed Council  
Tualatin Riverkeepers  
Upper Chattahoochee Riverkeeper  
Washington Wetlands Network  
Wisconsin Wetlands Association  
Western Lake Erie Waterkeeper  
Association  
Yell County Wildlife Federation

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<sup>4</sup> The Mississippi River Basin Alliance strongly opposed the Yazoo Pumps at the Draft SEIS phase. However, this organization is no longer in existence.

The Yazoo Pumps are strongly opposed by members of the public within the project area and throughout the state of Mississippi and the Nation. We are aware that more than 50,000 members of the public submitted comments in opposition to the Yazoo Pumps during the comment period on the Corps' FSEIS for the project. At least 22,966 individuals had submitted electronic comments on the FSEIS to the Corps, EPA, and the Department of the Interior strongly opposing the Yazoo Pumps project. An additional 27,432 members of the public had signed a petition opposing the project.<sup>5</sup> We are aware that well over ten thousand new electronic comments strongly supporting the Proposed Determination and urging EPA to finalize the veto as quickly as possible have already been submitted into the record for this veto process.

Local public opposition to this project is clear from petitions submitted in opposition to the Yazoo Pumps:

- On April 17, 2008, 97 individuals signed the petition entitled "People Opposing the Yazoo Pumps In Attendance at EPA's Public Hearing, April 17, 2008, Vicksburg Convention Center."<sup>6</sup> Of those signers, 73 individuals came from the following towns in Mississippi: Anguilla, Belzoni, Brandon, Clarksdale, Edwards, Florence, Glen Allan, Greenville, Greenwood, Jackson, Jerry, Mendenhall, Ridgeland, Rolling Fork, Terry, Utica, and Vicksburg. Many more individuals supporting a veto of the Yazoo Pumps also attended the public hearing without signing the petition.
- On August 20, 2007, the National Wildlife Federation delivered a petition to the Administrator of the Environmental Protection Agency signed by approximately 3,500 sportsmen and women from Mississippi and Louisiana urging him to exercise EPA's statutory 404(c) veto authority to halt the devastating Yazoo Backwater Pumps project.
- During a July 21, 2004 meeting with the Deputy Administrator of EPA, residents from the project area presented a petition strongly opposing the Yazoo Pumps project signed by more than 80 residents of Holly Bluff, a community within the project area.

The Yazoo Pumps have been opposed by the largest newspaper in the state of Mississippi, *The Clarion Ledger*, which has repeatedly and consistently editorialized against the Pumps. The *Clarion Ledger* has editorialized against the Yazoo Pumps at least eight times since April 1999, including most recently on February 6 and April 17, 2008. The *New York Times* has also repeatedly and consistently editorialized against the Yazoo Pumps. The *New York Times* has editorialized against the Yazoo Pumps on at least four occasions since January 2003, including most recently on February 26, 2008.

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<sup>5</sup> The petition was prepared by Environmental Defense and can be viewed at <http://www.thepetitionsite.com/takeaction/860167631> (last visited Jan. 20, 2008).

<sup>6</sup> A copy of this petition is attached at Tab B.

## Detailed Comments

### A. The Yazoo Pumps Would Cause Catastrophic Damage To Nationally Significant Wetlands

The Yazoo Pumps would cause wetland losses at a scale that should be unheard of in the 21<sup>st</sup> Century; that level of destruction certainly should not be allowed.

In 2000, the U.S. Environmental Protection Agency (EPA) concluded that the Yazoo Pumps would drain and damage more than 200,000 acres of ecologically significant wetlands, and would alter the hydrology of the entire 925,000 acre project area. Two hundred thousand acres of wetlands would cover an area larger than New York City – all five boroughs. It is twice as many wetlands as are destroyed in an entire year by all public and private projects nationwide, and it is six times as many wetlands as the Corps permits private developers to destroy in an entire year nationwide.

The Corps contends, however, that the Yazoo Pumps would drain and damage 67,000 acres of wetlands, and the Proposed Determination has utilized this number for assessing the appropriateness of a veto. However, as discussed below, it is clear that even this utterly unacceptable level of damage – a level of damage that clearly warrants a veto – would be just the starting point, as the Corps has vastly understated the damage that would be caused. Indeed, as discussed below, an independent hydrology assessment demonstrates that the wetland impacts are in fact quite likely to reach the 200,000 acres of damage recognized by EPA in 2000.

FWS has told the Corps that the Yazoo Pumps are “ecologically unsound” and “totally contrary to the Service’s goal for a balance between economic and environmental sustainability in the [Yazoo Backwater Area].”<sup>7</sup> A retired director of EPA’s Wetlands Division told the *New York Times* that:

“Over the course of my 24 years at the Environmental Protection Agency, I never reviewed a proposal that would do more damage to the environment than the Yazoo Pumps project in the Mississippi Delta.”<sup>8</sup>

And notably, the Department of the Interior has concluded that the proposed Yazoo Pumps project “will have unacceptable adverse effects on fishery areas, including spawning and

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<sup>7</sup> Final Fish and Wildlife Coordination Act Report at 31, 32.

<sup>8</sup> Letter to the Editor from John Meagher, retired director of the Wetlands Division, EPA, published in the *New York Times* on November 15, 2007 (available at <http://www.nytimes.com/2007/11/15/opinion/lweb15yazoo.html?n=Top/Opinion/Editorials%20and%20Op-Ed/Letters>)

breeding areas” and “unacceptable adverse effects on wildlife, specifically to the area’s breeding and migratory birds, including landbirds, shorebirds, wading birds, and waterfowl.”<sup>9</sup>

As EPA is well aware, these are the very impacts that can – and should – cause EPA to veto this project under Clean Water Act § 404(c). A § 404(c) veto is warranted if the project would produce an “unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas.”

**(1) Significantly More Wetlands Would Be Damaged By The Yazoo Pumps Than The 67,000 Acres Identified By The Corps Of Engineers**

As noted above, in its Final Supplemental Environmental Impact Statement (FSEIS), the Corps contends that the Yazoo Pumps would drain and damage 67,000 acres of wetlands. According to the Corps, 26,300 of those wetland acres would be drained to the point of becoming non-jurisdictional under the Clean Water Act, and an additional 40,700 acres of wetlands would suffer changes in the duration of inundation. FSEIS Main Report at 142.

While it is clear that 67,000 acres of wetlands damage fully warrants a Clean Water Act veto, it is equally clear that the impacts of the Yazoo Pumps would, in fact, be far greater. The FSEIS grossly understates the full extent of the damage, and the 67,000 acres of damage would be just the starting point for the damage that would be caused by the project.<sup>10</sup>

In their comments on the FSEIS, EPA, FWS, and the Department of the Interior make it clear that the Corps vastly understated the wetland impacts of the Yazoo Pumps.<sup>11</sup> For example, the Department of the Interior wrote that “the full extent of project-related impacts was not included in the FEIS or its associated appendices, and that led to gross underestimates of the extent of wetlands impacted and fish and wildlife affected by the Corps’ proposed action.”<sup>12</sup>

Indeed, even the Corps acknowledges that it has not assessed the full extent of the impacts. For example:

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<sup>9</sup> DOI Comments on the FSEIS at 7, 9 (emphasis added).

<sup>10</sup> The impact assessment in the Corps’ FSEIS is fatally flawed and inaccurate. In addition to its flawed assessment of wetland impacts, the Corps failed to evaluate impacts to non-wetland aquatic resources, failed to adequately evaluate the cumulative wetland impacts, failed to adequately evaluate the fish and wildlife impacts, and failed to evaluate the impacts of the project on amphibians, among other things.

<sup>11</sup> United States Department of the Interior, Office of the Secretary, Review of the Final Environmental Impact Statement (FEIS) for the Yazoo Backwater Area Reformulation Report, Mississippi, January 18, 2008 (hereafter, DOI Comments on the FSEIS); U.S. Fish and Wildlife Service, Fish And Wildlife Coordination Act Report, Yazoo Backwater Area, Mississippi Reformulation Study, October 2006 (Final Fish and Wildlife Coordination Act Report); EPA Comments on Draft SEIS.

<sup>12</sup> DOI Comments on the FSEIS at 16.

- The Corps acknowledges that it has not evaluated impacts to wetlands that are sustained by sources other than backwater flooding. FSEIS Main Report at 141. The decision to exclude impacts to wetlands sustained by rainfall defies logic, common sense, sound science, and the requirements of both the Clean Water Act and the National Environmental Policy Act.
- The Corps acknowledges that it has not evaluated impacts to short-hydroperiod wetlands. FSEIS Main Report at 141. As FWS has made clear, short-hydroperiod wetlands provide important fish and wildlife habitat and services. In addition, the full extent of the damage even to jurisdictional wetlands and other waters cannot be assessed without understanding the impacts to short-hydroperiod wetlands. This is because the wetlands and waters in the Yazoo Backwater Area are so interrelated that impacts to non-jurisdictional waters will have a significant affect on jurisdictional waters, and vice versa.
- The Corps acknowledges that if it calculates impacts based on the “upper 90 percent confidence” range, that operation of the Yazoo Pumps would affect 95,200 acres of wetlands, with 44,600 acres of wetlands becoming non-jurisdictional and an additional 50,600 acres of wetlands suffering changes in the duration of inundation. FSEIS Main Report at 142. At an absolute minimum, the Corps should have utilized this impact assessment in its FSEIS, and at an absolute minimum, EPA should rely on this acreage for making its veto determination (though the Conservation Organizations cannot stress enough that 67,000 acres of wetland impacts fully warrant a Clean Water Act veto).

A January 2008 independent hydrology analysis prepared by Nutter & Associates, Inc. for the National Wildlife Federation and American Rivers demonstrates that the Corps’ assessment grossly understates the true extent of the wetland damage. The Nutter & Associates study shows that the Corps’ flawed hydrology assessment led the Corps to understate the acres of wetlands that would be completely drained by at least 37,000 acres.<sup>13</sup>

This means that the Yazoo Pumps would cause at least 37,000 acres of jurisdictional wetlands to lose jurisdiction in addition to the 26,300 acres of wetlands that would lose jurisdiction identified by the Corps. So at a minimum, **63,300** acres of wetlands would be completely drained by the Yazoo Pumps, and *many* additional acres would suffer from changes in the duration of inundation. The Nutter & Associates report did not attempt to quantify the acres that would suffer from less than complete loss of jurisdiction, but it does recognize that the acreage suffering from such damage would be substantial.

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C<sup>13</sup> Nutter & Associates, Inc., Technical Memorandum No. 07-059.01, Review of the USACE Yazoo River Backwater Area Reformulation Report, Prepared for National Wildlife Federation American Rivers, January 22, 2008. A copy of this report is attached at Tab C.

The Nutter & Associates study documents the fundamental flaws in the Corps' hydrology analysis and concludes, among other things, that the Corps grossly underestimated the wetland impacts of the Yazoo Pumps because the Corps' models and data were too coarse to adequately evaluate the extent of the wetland impacts in the project area.

Importantly, the Nutter & Associates study also concludes that the EPA EMAP model provides a far better and much more defensible estimate of total wetland areas adversely affected by the Pumps than the models used by the Corps. The EPA EMAP model estimated that more than 212,284 acres of wetlands occur in the 100-year floodplain of the Lower Yazoo Basin.

One of the nation's premier wetland scientists, Dr. R. Eugene Turner, from Louisiana State University, has submitted comments into the record on this veto stating that he agrees that 212,000 acres is far more likely to be the true extent of the wetland impacts.<sup>14</sup>

Some of the many problems with the Corps' hydrology assessment were identified by EPA, FWS, the National Wildlife Federation, and the Conservation Organizations eight years ago in their comments on the Yazoo Pumps Draft SEIS. Those comments documented the following problems (among many others) with the hydrology analysis used in the Draft SEIS:

- the hydrologic models were not scientifically appropriate for use with this project because they were far too simplistic and coarse to evaluate the impacts of the Yazoo Pumps on the complex hydrology of the project area;
- the data used by the Corps to run its simplistic and inappropriate models was extremely limited and coarse; and
- there was no data or analysis of any kind in the Draft SEIS to support the stage-frequency analysis that formed the basis of all the Corps' claims of flood reduction benefits.

These deficiencies were not corrected in the FSEIS, and as noted in the Nutter & Associates study led to the Corps grossly underestimating the wetland impacts from the Yazoo Pumps.

The Corps' hydrology analysis forms the foundation for all other analyses in the FSEIS, and Reformulation Report, including the analysis of wetlands impacts, fisheries impacts, waterfowl impacts, endangered and threatened species impacts, needed mitigation, economic costs and benefits, and project need. The significant flaws in the Corps' hydrology analysis makes it impossible for the Corps' FSEIS to have properly analyzed these other impacts.<sup>15</sup>

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<sup>14</sup> Dr. Turner submitted his comments to the EPA docket on the Yazoo Pumps veto on April 23, 2008.

<sup>15</sup> Lack of an accurate assessment of project impacts and hydrologic changes that will be induced by the Yazoo Pumps can have significant implications. For example, without such accurate assessments, neither the Corps nor FWS can accurately assess the impacts of the project on the federally endangered pondberry, or determine what reasonable and prudent alternatives would be appropriate for avoiding jeopardy. If the hydrology of the area

The Corps' understatement of impacts, while extremely troubling and problematic, is not particularly surprising. In 2006, the U.S. Government Accountability Office told Congress that recent Corps studies were so flawed that they could "not provide a reasonable basis for decision-making." Those studies, like the one for the Yazoo Pumps, "were fraught with errors, mistakes, and miscalculations, and used invalid assumptions and outdated data."<sup>16</sup>

**(2) The Wetlands Damage From The Yazoo Pumps Would Dwarf The Cumulative Wetland Impacts Of All Projects Vetoed Under The Clean Water Act, And Would Dwarf the Yearly Wetland Losses Permitted Through The Corps' Regulatory Program**

The mindboggling magnitude of the wetland impacts from the Yazoo Pumps can readily be seen through a comparison with the wetland impacts that would have been caused by projects determined to be so destructive that they were vetoed by EPA under Clean Water Act § 404(c). This extremely powerful regulatory tool has been used quite carefully by EPA. As set forth in the chart below, EPA has issued only eleven 404(c) vetoes to date. The cumulative wetland impacts of all projects vetoed under Clean Water Act § 404(c) would have been 7,780 acres.

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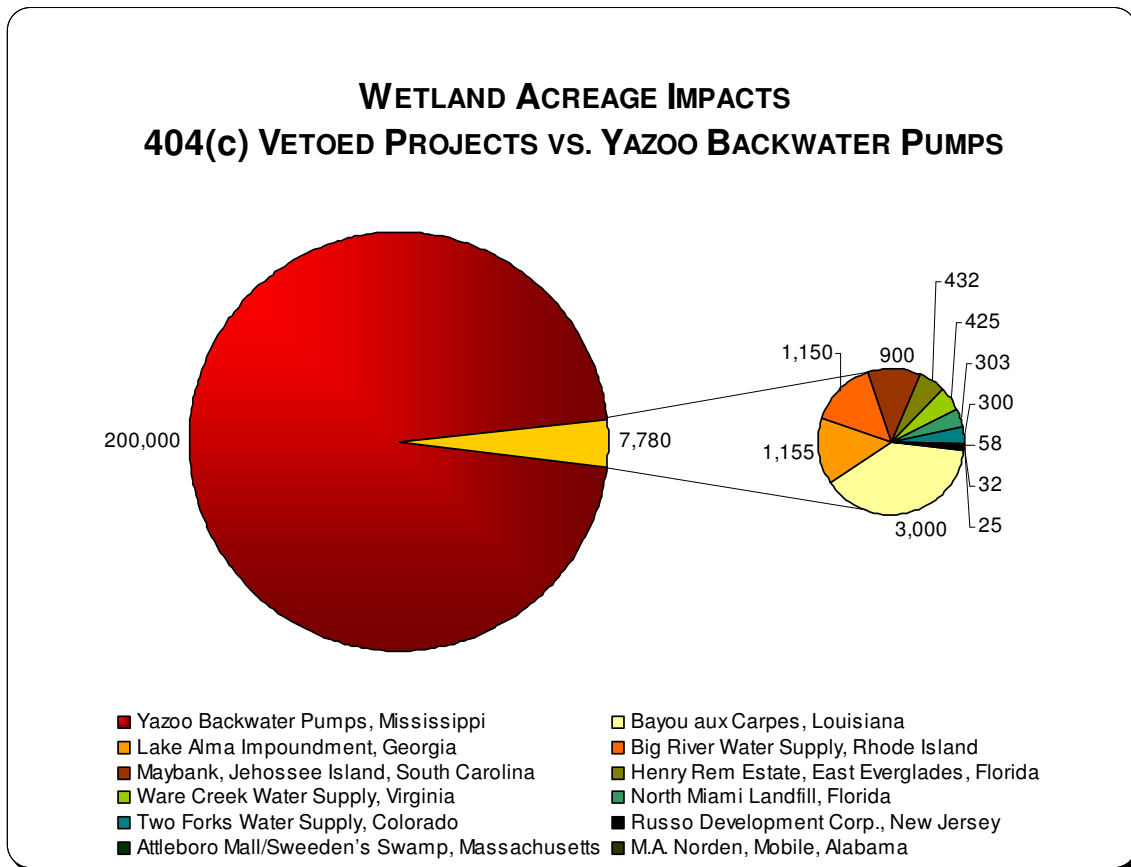
targeted for re-colonizing pondberry populations would in fact be affected by the Yazoo Pumps, the re-colonization attempts may well fail.

<sup>16</sup> U.S. Government Accountability Office, *Corps of Engineers, Observations on Planning and Project Management Processes for the Civil Works Program*, March 2006, (GAO-06-529T).

**PROJECTS VETOED UNDER CLEAN WATER ACT § 404(C)**

<b>Project</b>	<b>Wetland Impacts (acres)</b>	<b>Effective Veto Date</b>
North Miami Landfill, FL	303	January 19, 1981
M.A. Norden, Mobile, AL	25	June 15, 1984
Maybank, Jehossee Island, SC	900	April 15, 1985
Bayou aux Carpes, LA	3,000	October 16, 1985
Attleboro Mall/Sweeden's Swamp, MA	32	May 13, 1986
Russo Development Corp., NJ	58	March 21, 1988
Henry Rem Estate, East Everglades, FL	432	June 15, 1988
Lake Alma Impoundment, GA	1,155	December 16, 1988
Ware Creek Water Supply, VA	425	July 10, 1989
Big River Water Supply, RI	1,150	March 1, 1990
Two Forks Water Supply, CO	300	November 23, 1990
<b>Total Wetland Impacts</b>	<b>7,780</b>	

The wetland impacts of the Yazoo Pumps would dwarf those of all the other vetoed projects. The Yazoo Pumps would damage more than 25 times the combined wetland impacts of all other vetoed projects under EPA's highly accurate 200,000 acre wetland impact assessment. Even under the Corps' incomplete wetland impact assessment of 67,000 acres of damage, the Yazoo Pumps would cause more than 8.5 times the combined wetland impacts of all other vetoed projects.



The wetland impacts of the Yazoo Pumps would also dwarf the wetland acres permitted annually by the Corps under the Clean Water Act § 404 regulatory program. EPA's estimate of 200,000 acres of wetland damage is six times as many wetlands as the Corps permits to be damaged in an entire year nationwide. The Corps' underestimate of 67,000 acres of wetland damage is still three times more wetlands than the Corps permits private developers to damage in an entire year nationwide. On average, the Corps issues 86,000 wetland permits each year.

**B. The Yazoo Pumps Would Drain Some of the Richest Wetland Resources In The Nation, Including Wetlands That Federal Taxpayers Are Paying To Protect**

FWS has made it clear that the area that would be impacted by the Yazoo Pumps “contains some of the richest natural resources in the nation including a highly productive floodplain fishery, one of only a few remaining examples of the bottomland hardwood forest ecosystem which once dominated the Lower Mississippi Alluvial Valley, and is one of only four remaining backwater ecosystems with a hydrological connection with the Mississippi River.”<sup>17</sup> The Yazoo Pumps would cut off the hydrological cycle of backwater flooding that “is critically important to maintenance of project-area wetland and aquatic habitat values, including fisheries production” and that provides the biochemical link to the rest of the lower Mississippi Alluvial Valley ecosystem.<sup>18</sup> FWS has also concluded that the Yazoo Pumps are likely to adversely affect the federally endangered pondberry unless the Corps strictly adheres to the reasonable and prudent alternatives recommended by FWS.

Wetlands that would be drained and damaged by the Yazoo Pumps include wetlands on lands being managed (at the federal taxpayers’ expense) by FWS and other federal agencies as wetland systems for fish and wildlife habitat. Wetlands would be drained in the Panther Swamp National Wildlife Refuge and the three other national wildlife refuges that make up the Yazoo National Wildlife Refuge Complex; wetlands would be drained in the Delta National Forest – the only bottomland hardwood forest in the National Forest System; wetlands would be drained on lands owned and managed as mitigation for wetland losses caused by previously constructed federal flood control projects; and wetlands would be drained on lands enrolled in both the Wetlands Reserve Program (WRP) and the Conservation Reserve Program (CRP).<sup>19</sup>

Under the Corps’ wetlands impacts assessment – which, as discussed above, grossly underestimates the wetland impacts from the project – the Yazoo Pumps would drain and damage 20,845 acres of publicly protected wetlands, including:

- 6,695 acres of wetlands within the 2 to 5-year floodplain in the four National Wildlife refuges that make up the Yazoo National Wildlife Refuge Complex;
- 8,500 acres of wetlands of within Delta National Forest and State Wildlife Management Areas;
- 2,500 acres enrolled in WRP; and
- 3,150 acres enrolled in CRP.<sup>20</sup>

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<sup>17</sup> *Id.* at 1.

<sup>18</sup> *Id.* at 11.

<sup>19</sup> DOI Comments on the FSEIS.

<sup>20</sup> DOI Comments on the FSEIS at 10, 13.

The Corps also acknowledges that 18,000 of the 26,300 acres of wetlands that would be drained to the point of becoming non-jurisdictional under the Clean Water Act, are forested wetlands (with 10,900 acres of those forested wetlands currently under public protection). FSEIS, Appendix 1 Mitigation at S-2. Again, as bad as these impacts are, they are a gross underestimate of the true impacts of the project.

Forested wetlands have long been recognized as vitally important and as being “among the Nation’s most important wetlands.”<sup>21</sup> The bottomland hardwood wetlands of the Lower Mississippi River Valley:

“are prime overwintering grounds for many North American waterfowl, including 2.5 million of the 3 million mallards of the Mississippi Flyway, nearly all of the 4 million wood ducks and many other migratory birds. Numerous finfishes depend on the flooded hardwoods for spawning and nursery grounds. These wetlands support many other species of wildlife, including deer, squirrel, raccoon, mink, beaver, fox and rabbit. They also play a vital role in reducing flooding problems by temporarily storing large quantities of water and by slowing the velocity of flood waters. In the process, these wetlands remove chemicals such as fertilizers and pesticides from the water, trap soil eroding from nearby farmlands, and recharge ground water supplies.”<sup>22</sup>

However, despite being one of our most important wetland resources, the bottomland hardwood wetlands in the lower Mississippi River basin also are “one of the most seriously depleted and threatened.”<sup>23</sup> By 1988, some 80 percent of the original wetlands in the bottomland hardwood region of the lower Mississippi had been lost.<sup>24</sup>

As discussed in the December 10, 2007 letter opposing the Yazoo Pumps project signed by 541 wetland and aquatic scientists and professionals, including 144 Ph.D.’s, from 46 states, the District of Columbia, and seven foreign countries, the wetlands that would be drained and damaged by the Yazoo Pumps are vitally important<sup>25</sup> as they:

- **“Provide vital fish and wildlife habitat.** Wetlands are some of the most biologically productive natural ecosystems in the world, and are comparable to tropical rain forests and coral reefs in their productivity and the diversity of species they support

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<sup>21</sup> Report to Congress by the Secretary of the Interior, *Impact of Federal Programs on Wetlands*, 1988, Volume I at 39

<sup>22</sup> *Id.*

<sup>23</sup> *Id.*

<sup>24</sup> *Id.*

<sup>25</sup> The Corps’ own regulations make it clear that wetlands serve many important functions including helping to reduce flood levels, filtering pollutants from water, and providing vital habitat for fish and wildlife. *See* 33 C.F.R. §320.4(b)(2).

(EPA 2001). Wetlands allow the development of organisms that form the base of the food web, produce tremendous quantities of food, and provide water and shelter for a host of species. A majority of fish species, one-third of all U.S. bird species, and many species of amphibians are dependent on wetlands. Forty-three percent of species listed as threatened or endangered under the federal Endangered Species Act rely directly or indirectly on wetlands for their survival. Wetlands are particularly important to birds and mammals when they are breeding or migrating. The wetlands that will be drained by the Yazoo Pumps help support the migration of 20 percent of the nation's duck populations. The wetlands that will be drained are also home to breeding Louisiana Black Bears, which are listed as threatened under the federal Endangered Species Act. Researchers have found that in the spring and summer, bears spend 60 percent of their time in forested wetlands and the remainder of their time moving between wetland areas (Newton 1988).

- ***Improve water quality and reduce problems caused by excess nutrient loadings.*** Wetlands help improve water quality by removing and retaining inorganic nutrients, processing organic wastes, and reducing suspended sediments from surface runoff before the runoff reaches open water. For example, wetlands have a tremendous capacity to retain or process excess nitrogen and phosphorus, which helps to reduce environmental problems that are associated with these excess nutrients, including dead zones, fish kills, and algal blooms. Riparian and forested wetlands are particularly effective at trapping pollutants and nonpoint source runoff before they reach streams, rivers, bayous, and lakes (Tiner 2005; Gilliam 1994; Brinson 1993; Walbridge 1993). In recognition of this important value, scientists have recommended substantial wetlands restoration to help reduce the size of the enormous hypoxic zone in the Gulf of Mexico.
- ***Reduce flood damages.*** By acting as natural sponges and reservoirs, wetlands soak up, store, and then slowly release rain, storm water, snowmelt, groundwater, and flood waters. This process both slows the water's momentum, reduces its erosive potential, and reduces flood heights. A single acre of wetland can store 1 to 1.5 million gallons of floodwater (EPA 2001). By contrast, when upstream wetlands and streams are destroyed, streams throughout the aquatic system experience increased flooding due to the loss of water retention upstream (Meyer 2003).
- ***Replenish groundwater and help maintain stream flow during dry periods.*** Mineral soils found at the edges of many wetlands allow surface water to infiltrate into the ground, helping to recharge groundwater (Verry and Timmons 1982). Ground water recharge through wetlands can contribute significantly to recharge of regional water resources, particularly in large floodplain areas with long retention times, and in areas where wetlands have a high perimeter to volume ratio (Weller 1981; O'Brien 1988; Hook et al. 1988; Brown and Sullivan 1988; Taylor et al. 1990; Gosselink et al. 1990;

Ewel 1990; Reilly et al. 1991; Brinson 1993; Demissie and Khan 1993). A forested wetland overlaying permeable soil can recharge 100,000 gallons of water per acre per day (Anderson and Rockel 1991), and other wetlands recharge groundwater at a rate of up to 20% of wetland volume per season (Weller 1981). This is particularly important in the Yazoo Pumps project area where rivers, streams, and bayous are experiencing significant low flow levels during the summer months.

- ***Store carbon which is important for moderating global climate change.*** Many wetlands can store carbon within their plant communities and soil instead of releasing it to the atmosphere as carbon dioxide. This storage can help moderate global climate conditions. Draining, filling, and clearing of wetlands, on the other hand, release carbon dioxide into the atmosphere. “[F]orested wetlands are unparalleled in their capability to take up the carbon-rich gases that are the primary cause of global warming, sequestering significant quantities of elemental carbon while replenishing the atmosphere with oxygen” (FWCA Report 2006).<sup>26</sup>

**(1) Damage To Wetlands And The Species That Rely On Them Will Be Significant Even Where Only Small Changes In Hydrology Occur**

The seminal textbook on wetlands makes it clear that even small alterations in wetlands hydrology can produce significant and ecosystem-wide changes: “When hydrologic conditions in wetlands change even slightly, the biota may respond with massive changes in species composition and richness and in ecosystem productivity.”<sup>27</sup>

Indeed, “[h]ydrology is probably the single most important determinant of the establishment and maintenance of specific types of wetlands and wetland processes,” and even “small changes in hydrology can result in significant biotic changes.”<sup>28</sup> This is because:

Hydrology affects the species composition and richness, primary productivity, organic accumulation, and nutrient cycling in wetlands. . . . Water depth flow patterns, and duration and frequency of flooding, which are the result of all the hydrologic inputs and outputs, influence the biochemistry of the soils and are major factors in the ultimate selection of the biota of wetlands. . . . Hydrologic conditions can directly modify or change chemical and physical properties such as nutrient availability, degree of substrate anoxia, soil salinity, sediment properties, and pH.<sup>29</sup>

In 2000, EPA concluded that even where wetlands would not be completely destroyed by the Yazoo Pumps, wetland hydrology would be so altered that there would be significant and

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<sup>26</sup> Scientists Letter Opposing the Yazoo Pumps.

<sup>27</sup> William J. Mitsch and James G. Gosselink, *Wetlands* (2nd ed.) (1993) at 68 (emphasis added).

<sup>28</sup> *Id.* at 68.

<sup>29</sup> *Id.* at 67-68.

adverse affects to fisheries, wildlife habitat, water quality, water quantity, soil moisture recharge, deposition of sediments and nutrients, and flood pulse conditions.<sup>30</sup>

**(2) The Damage From The Yazoo Pumps Would Be Amplified By The Massive Cumulative Losses of Wetlands In The Region**

The Yazoo Pumps' adverse impacts to wetlands, and the fish and wildlife, recreation, and water supplies that rely on healthy wetlands would be amplified by the significant cumulative losses of wetlands and hydrological modifications that have already taken place in both the Yazoo Backwater Area and the Mississippi Delta.

As noted above, some 80 percent of the original wetlands in the bottomland hardwood region of the lower Mississippi had been lost by 1988.

The Corps has also constructed many large scale, structural flood protection projects within the Yazoo Basin that have significantly altered the hydrology and wetland composition of the project area. These include the Mississippi River Mainline Levees, the Yazoo Area and Satartia Area Levees, the Yazoo Backwater Levees, the original Big Sunflower River project, the 28 mile connecting channel between the Little Sunflower River and Steele Bayou, the 65 mile Will Whittington Canal Auxiliary Channel and Levees, the 6 mile connecting channel between the Big Sunflower River and the Little Sunflower River, the Steele Bayou Flood Control Structure, the Muddy Bayou Control Structure, and the Little Sunflower River floodgate.

These projects have had enormous impacts on the hydrology, wetlands, fish, and wildlife in the project area. The Corps also is currently building and/or planning projects that are causing, and will continue to cause additional significant adverse impacts on these same resources. These include the Mississippi River Mainline Levee Enlargement Project, the Big Sunflower River Maintenance Project, and the Upper Steele Bayou Project.

A significant loss of wetlands in the project area has also been allowed under the Corps' regulatory program. For example, from 1995 to 2000, the Corps permitted at least 1,069 acres of wetland impacts in the project area.<sup>31</sup> Additional wetland impacts have certainly been permitted in the project area since 2000.

The wetland losses from the Yazoo Pumps – as unacceptable as they are – cannot be looked at in a vacuum. The impacts of those losses must be evaluated in light of the cumulative wetland losses in the project area and the Mississippi Delta.

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<sup>30</sup> EPA Comments on the Draft SEIS.

<sup>31</sup> U.S. Army Corps of Engineers response to a Freedom of Information Act request submitted by Earthjustice Legal Defense Fund.

**(3) The Yazoo Pumps Would Cause Adverse Impacts To Rivers, Streams, Lakes, And Bayous That Should Be Taken Into Account In The 404(c) Assessment**

In addition to jurisdictional and non-jurisdictional wetlands, there are a multitude of small streams, rivers, bayous, and lakes in the Yazoo Pumps project area. However, the Corps' FSEIS fails to evaluate the impacts of the Yazoo Pumps on the hydrologic regimes; flow levels; and the physical, chemical and biological integrity of these non-wetland aquatic systems.

The ecological services provided by wetlands and small streams cannot be overstated. They are essential for maintaining the physical, chemical, and biological integrity of the nation's waters, and the loss of so many wetlands must affect streams, rivers, bayous and lakes in the project area.<sup>32</sup> The Corps did not evaluate any of these impacts, and this failure violates the Clean Water Act (and the National Environmental Policy Act).

Impacts to rivers, streams, lakes, and bayous should be taken into account in EPA's 404(c) assessment.

**C. The Yazoo Pumps Would Cause Unacceptable Adverse Effects On Fish and Wildlife**

The Department of the Interior has concluded that the Yazoo Pumps project "will have unacceptable adverse effects on fishery areas, including spawning and breeding areas" and "unacceptable adverse effects on wildlife, specifically to the area's breeding and migratory birds, including landbirds, shorebirds, wading birds, and waterfowl."<sup>33</sup> These impacts have been documented in the final Fish and Wildlife Coordination Act report for the Yazoo Pumps project.<sup>34</sup>

An Annotated Bibliography of Scientific Studies that summarizes additional scientific support for the importance of healthy and naturally functioning wetlands, and the importance of retaining natural floodplain hydrology in the Yazoo Backwater Area to the ecosystem and the fish, birds, and wildlife that rely on those wetlands, is attached to these comments at Tab D. Many of the studies referenced in that bibliography have also been submitted into the record. A bibliography of studies examining the impacts of hydrology on wetland plants is attached at Tab E. Additional scientific information on bats in the project is attached at Tab F. Some of the studies referenced in these attachments are discussed briefly below.

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<sup>32</sup> See generally Judy L. Meyer et al., *Where Rivers Are Born: The Scientific Imperative for Defending Small Streams and Wetlands* (Feb. 2007), available at <http://www.americanrivers.org/site/DocServer/WhereRiversAreBorn1.pdf?docID=182>. A copy of this report has been submitted into the administrative record for the 404(c) veto.

<sup>33</sup> DOI Comments on the FSEIS at 7, 9 (emphasis added).

<sup>34</sup> Final Fish and Wildlife Coordination Act Report.

The scientific literature makes clear that altering wetland hydrology and eliminating or reducing overbank flooding onto the floodplain can have significant and in some cases catastrophic implications for the health and welfare of the species that rely on wetland and floodplain systems. The impacts can not always be tied with certainty to affects to a particular species, but that does not make them any less dire.

For example, wetland loss has been associated with the direct loss of species diversity due to destruction and lowered recruitment of infringing vegetation communities and displacement of fauna. A 1999 study concluded that the effects of the loss or lowered recruitment of these plants ripples throughout the trophic ladder. Fauna that depend on wetland plants as a source of food or shelter perish or migrate, resulting in the loss of fauna that are predaceous, and so on.<sup>35</sup>

A 2002 study that looked at the distribution of fauna in aquatic ecosystems found that the “migration of many species, aquatic and terrestrial, is tightly coupled with the temporal and spatial dynamics of the shifting landscape mosaic. Alternation of landscape use by terrestrial and aquatic fauna corresponds to the rise and fall of the flood. Complex ecological processes inherent to intact riverine landscapes are reflected in their biodiversity, with important implications for the restoration and management of river corridors.”<sup>36</sup>

A 2005 study found that hydrological changes are driving many aquatic insect species to extinction. This study that looked at nearly 5,000 historical and contemporary specimen records of stoneflies (Plecoptera) from Illinois showed that the stoneflies are highly imperiled, and have suffered dramatic losses, that does not bode well for other aquatic insect communities in North America and elsewhere.<sup>37</sup> Nearly 77 total species have already been extirpated, a rate of loss that is higher than the loss rate for either mussels or fish in Illinois. Large river habitats and historically prairie regions have experienced the greatest proportional losses of species. “In most cases the losses can be attributed to hydrologic modifications such as levee, lock, and dam construction on the large rivers and channelization, coupled with tiling of fields, in agricultural areas.”<sup>38</sup> Stoneflies can be used as a surrogate for other aquatic insect, and this makes it clear that tremendous losses of aquatic insects have already occurred and which continue to occur.<sup>39</sup> The loss of aquatic insects will certainly adversely effect the fish, birds, bats, and other species that rely on those insects as an important food source.

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<sup>35</sup> Davis, J.A. and R. Froend. “Loss and Degradation of Wetlands in Southwestern Australia: Underlying Causes, Consequences and Solutions.” *Wetlands Ecology and Management* 7.1-2 (1999): 13-23.

<sup>36</sup> Robinson, C.T., K. Tockner, and J.V. Ward. “The Fauna of Dynamic Riverine Landscapes.” *Freshwater Biology* 47.4 (2002): 661-677. Abstract:

<http://www.ingentaconnect.com/content/bsc/fwb/2002/00000047/00000004/art00010>

<sup>37</sup> DeWalt, E.R., C. Favret, D. Webb. “Just How Imperiled Are Aquatic Insects? A Case Study of Stoneflies (*Plecoptera*) in Illinois.” *Conservation Biology and Biodiversity*. *Ann. Entomol. Soc. Am.* 98(6): 941-950 (2005).

<sup>38</sup> *Id.*

<sup>39</sup> *Id.*

**(1) The Yazoo Pumps Would Cause Significant Adverse Impacts to Fisheries**

As discussed in detail in the Fish and Wildlife Coordination Act report, and in the scientific studies included in the Annotated Scientific Bibliography, the hydrologic alterations from the Yazoo Pumps would cause significant adverse impacts to fisheries in the project area.

This damage would occur both on wetland acres that would be completely drained and on those wetlands that would see changes in the duration and depth of inundation of flooding. Floodplain dependent fisheries require ready access to the floodplain, and require the right amount of water for an appropriate amount of time.

For example, a study carried out on the Yockanookany River in Mississippi found that channel catfish (a generalist) “will move along the continuum to locate foraging opportunities on or emanating from the floodplain and associated backwaters.” The channel catfish studied actively sought reaches of the river that were connected to the floodplain, but the fish studied never swam from a stretch of the river connected to the backwater to a stretch of the river disconnected from the backwater.<sup>40</sup>

A 2006 study on the thermal and temporal components of temperate floodplain river ecosystems looked at the importance to fisheries of overbank flooding occurring for long enough periods of time during the right time of the year so that the floodplain waters reach the optimum temperatures required for sufficient fish growth and feeding. The study shows that protracted flooding when the water temperature is warmer (15 degrees C) results in significant growth increases for blue catfish (a floodplain species). The study concludes that restoration of ecological function should include “strategies designed to detain and warm floodplain waters” in order to recouple the thermal and flood cycles. “Such strategies should include maintaining or re-establishing connectivity of exiting waterbodies within the leveed floodplain.”<sup>41</sup>

Many additional scientific studies addressing potential impacts to fish are included in the attached Annotated Bibliography.

**(2) The Yazoo Pumps Would Cause Significant Adverse Impacts to Breeding and Migratory Birds, Including Landbirds, Shorebirds, Wading Birds, and Waterfowl**

As made clear in the Final Fish and Wildlife Coordination Act (FWCA) report, the Yazoo Backwater Area “supports hemispherically significant populations of resident and migratory land

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<sup>40</sup> Flotemersch, J. E., D. C. Jackson and J. R. Jackson. 1999. Channel catfish movements in relation to river channel-floodplain connections. *Proceedings of the Annual Conference of the Southeastern Association of Fish and Wildlife Agencies* 51(1997): 106-112.

<sup>41</sup> Schramm, H.L., Michael A. Eggleton. “Applicability of the flood-pulse concept in a temperate floodplain river ecosystem: Thermal and temporal components.” *River Research and Application* 22: 543-553 (2006).

birds and waterfowl.”<sup>42</sup> The Fish and Wildlife Coordination Act report documents the many important services provided to these species by the wetlands and other aquatic resources of the Yazoo Backwater Area.

The FWCA report also makes it clear that the Yazoo Backwater Area has enormous potential for the future of many bird species. Within the Mississippi Alluvial Valley, the “greatest potential for meeting these breeding bird habitat restoration and protection needs lies within the YBWA sumps, because of the relatively numerous, but disjunct, BLHF habitat patches that could potentially be connected via reforestation to restore larger contiguous blocks of habitat. Large contiguous blocks of BLHF are crucial for achieving and sustaining interior forest bird populations and diversity.”<sup>43</sup>

The FWCA report also notes that Important Bird Areas (IBA) are found in the Yazoo Backwater Area. “Criteria for IBAs include: must support endangered, threatened, or vulnerable species, of a unique or threatened natural community; where birds concentrate in significant numbers; and support exceptional numbers or diversity of migratory landbirds. IBAs in the project area include Delta National Forest, Panther Swamp and Yazoo NWRs, Mahannah WMA, and Tara Wildlife, Inc., a private holding dedicated to wildlife conservation.”<sup>44</sup>

The scientific literature, including studies submitted into the record and summarized in the attached Annotated Scientific Bibliography also demonstrate that hydrology has an important impact on many songbirds and neotropical migrant bird species.

For example, a 2006 study found that habitat fragmentation, wetland destruction and stream channelization increased nest predation on prothonotary warblers. Nest predation decreased, however, as water depth increased, especially over 60 cm of water. Nest predation on prothonotary warblers has a strong, negative effect on annual reproductive output.<sup>45</sup>

A 2003 study compared avian communities in a variety of natural and created wetlands. The study found that created wetlands have a lower diversity of avian species and fewer species of conservation concern. The authors hypothesize that unnatural hydrology and retarded vegetation development account for the differences.<sup>46</sup>

A 1992 study found that approximately 30 of the 70 species of birds that breed regularly in bottomland hardwood forests are neotropical migrants, and at some sites neotropical migrants

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<sup>42</sup> FWCA Report at 1.

<sup>43</sup> *Id.* at 7

<sup>44</sup> *Id.* at 8

<sup>45</sup> Hoover, Jeffrey. “Water Depth Influences Nest Predation for a Wetland-Dependent Bird in Fragmented Bottomland Forests.” *Biological Conservation* 127.1 (2006): 37-45.

<sup>46</sup> Snell-Rood, Emilie and Daniel Cristol. “Avian Communities of Created and Natural Wetlands: Bottomland Forests in Virginia.” *The Condor* 105.2 (2003): 303-315.

make up 48% to 65% of species recorded.<sup>47</sup> It also discusses a study carried out in the Tensas River basin of northeast Louisiana, which “revealed differences in use among bald cypress habitat, seasonally flooded forest, and non-flooded forest.” The study found that “long-distance migrants encountered more frequently in bald cypress habitat than elsewhere were the Yellow-throated Warbler and Northern Panda. Five species, the Eastern Wood-Pewee, Great Crested Flycatcher, Yellow-throated Vireo, Prothonotary Warbler, and Blue-Gray Gnatcatcher, were most common in the seasonally flooded zones. Areas that do not typically flood were used preferentially by the Redeyed Vireo, American Redstart, Swainson’s Warbler, and Hooded Warbler.”<sup>48</sup>

In addition, “an analysis of Breeding Bird Survey (BBS) data for the 25-year period from 1966 to 1990, Wiedenfeld et al. (unpubl. ms.) found that the Mississippi Alluvial Plain was one of five physiographic areas in the continental coverage of BBS in which extremely notable declines occurred. Of the 65 bird species they examined, 77% of those breeding in this area had declined. Declining species include interior forest birds such as Prothonotary Warbler, and also second growth or edge species such as the Orchard Oriole and Yellow-breasted Chat.” The study hypothesizes that because much of these declines occurred during a period when the availability of forested habitat remained fairly stable, and because many of the affected populations are stable in other physiographic areas, it must be inferred that declining quality as well as quantity of bottomland hardwood breeding habitat has been a contributing factor. Factors that could be causing the declines include fragmentation, an altered hydrological regime, or a plant species composition that may reflect historical silvicultural treatments more than natural conditions.<sup>49</sup>

In a study carried out during 1988-89, songbird populations and habitat characteristics were sampled along two belt transects extending across the broad, forested floodplain of the Cache River, Arkansas. The study sought to compare avian abundance and species richness among floodplain forest zones and to investigate bird species distributions in relation to the wetness gradient. It found that “forest zones differed in structure, flooding regime, and use by birds. The tupelo/baldcypress zone, in particular, provided habitat unlike that in the higher oak-dominated zones and supported a number of bird species that were much less abundant elsewhere. Distributions of chimney swifts (*Chaetura pelagica*), prothonotary warblers (*Protonaria citrea*), and great crested flycatchers (*Myiarchus crinitus*) were skewed toward wetter sites, whereas summer tanagers (*Piranga rubra*), red-eyed vireos (*Vireo olivaceus*), and others were skewed toward drier sites.”<sup>50</sup>

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<sup>47</sup> Pashely, David and Wylie Barrow. “Effects of Land Use Practices on Neotropical Migratory Birds in Bottomland Hardwood Forests.” In: Finch, Deborah M.; Stangel, Peter W. (eds.). Status and management of neotropical migratory birds: September 21-25, 1992, Estes Park, Colorado. Gen. Tech. Rep. RM-229. Fort Collins, Colo.: Rocky Mountain Forest and Range Experiment Station, U.S. Dept. of Agriculture, Forest Service: 315-320.

<sup>48</sup> *Id.*

<sup>49</sup> *Id.*

<sup>50</sup> Wakeley, JS and TH Roberts. “Bird Distributions and Forest Zonation in a Bottomland Hardwood Wetland.” *Wetlands* 16.3 (1996): 296-308.

The *Independent*, a British newspaper recently reported that the “number of migratory songbirds returning to North America has gone into sharp decline due to the unregulated use of highly toxic pesticides and other chemicals across Latin America. . . . By some counts, half of the songbirds that warbled across America’s skies only 40 years ago have gone, wiped out by pesticides or loss of habitat.”<sup>51</sup> Songbirds in the most trouble include the wood thrush, the Kentucky warbler, the eastern kingbird and the bobolink. The first three of these species are common nesters in the Yazoo Backwater Area, and the bobolink migrates through the Yazoo Backwater Area. These species may suffer significant additional stress from the damage done by the Yazoo Pumps.

Additional stressors could also be placed on many bird species through the dangerously rapid loss of aquatic insects discussed above.

### **(3) The Yazoo Pumps Would Cause Significant Adverse Impacts to Amphibians and Reptiles**

It is well established that wetlands are extremely important to amphibians (frogs, toads, newts) and reptiles (snakes, turtles), and many endangered and threatened amphibian and reptile species are especially linked to wetlands.<sup>52</sup> The enormous wetland losses from the Yazoo Pumps puts these species at particular risk in the project area. This danger is amplified by the fact that amphibian populations are in precarious state world-wide. In 2004, the World Conservation Union, Conservation International, and NatureServe reported that one-third of all amphibian species world-wide are in decline.

Among imperiled amphibian populations in the Southeast, the most common dangers to species survival are habitat destruction, fragmentation, and alteration – the very impacts that would result from construction and operation of the Yazoo Pumps. The wetland losses from the Yazoo Pumps could be particularly problematic for amphibian species.

Amphibians thrive in cool wetland environments, and are found in all types of wetlands except more saline coastal environments. Small, isolated wetlands play especially important roles in amphibian productivity.<sup>53</sup>

Amphibian populations thrive when there are a variety of small ecosystems within a regional landscape in which a “dynamic equilibrium” of different populations becomes established.<sup>54</sup>

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<sup>51</sup> Leonard Doyle, American songbirds are being wiped out by banned pesticides, *Independent*, April 4, 2008 <http://www.independent.co.uk/news/world/americas/american-songbirds-are-being-wiped-out-by-banned-pesticides-804547.html>

<sup>52</sup> E.g., *Wetlands* at 517.

<sup>53</sup> Gibbons, J. Whitfield, Christopher Winne, et. al. 2006. Remarkable Amphibian Biomass and Abundance in an Isolated Wetland: Implications for Wetland Conservation. *Conservation Biology* Volume 20, No. 5, 1457–1465.

However, if the environment becomes overly fragmented, the dynamic equilibrium is disturbed because patterns of emigration and immigration may be disrupted.

Amphibians spend part of their life cycles in an aquatic environment and part in a terrestrial environment (typically returning to water to breed). For example, some salamanders undergo larval development within an aquatic environment, and then live along wet streamsides following metamorphosis into adult stages. Those that do not breed in water still need moist environments to prevent extreme dehydration.<sup>55</sup> The tadpoles of most frog species develop in ponds, lakes, wet prairies, and other still bodies of water, while others are known to breed in a wide variety of wetland habitats. As adults, toads, frogs and some salamanders can travel relatively great distances from water sources, but they return to water to reproduce.

Agricultural practices can have negative impacts on amphibian populations. In addition to replacing natural habitat with foreign species, agriculture can dramatically change the ecosystem. For example, on the southeastern Coastal Plain, where pine plantations have replaced the native longleaf pine savanna, ditches to speed water runoff caused thousands of acres of wetlands to disappear. Ditching between ponds to facilitate water transfer can shorten hydroperiods for amphibian larval development. Ditching wetlands lowers water tables, subsequently changing the local vegetation and altering or eliminating hydroperiods. Studies have demonstrated that unditched ponds, on the other hand, have greater amphibian species richness during dry periods,<sup>56</sup> which is especially important for those pond-breeding species that return to breeding sites.

Land use changes caused by activities such as road building can also affect amphibian populations in a number of ways. In addition to the dangers of habitat fragmentation mentioned above,<sup>57</sup> roads can separate overwintering sites from breeding sites and increase mortality as animals attempt to cross. For example, one study showed that as few as 26 vehicles per hour on one road prevented any toads from crossing it.<sup>58</sup> Land use changes that destroy environments

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<sup>54</sup> Mann, W., P. Dorn, and R. Brandl. 1991. Local distribution of amphibians: The importance of habitat fragmentation. *Global Ecology and Biogeography Letters* 1:36-41.

<sup>55</sup> Semlitsch, R. D. 1987. Relationship of pond drying to the reproductive success of the salamander *Ambystoma talpoideum*. *Copeia* 1987:61-69; Pechmann, J. H. K., D. E. Scott, J. W. Gibbons, and R. D. Semlitsch. 1989. Influence of wetland hydroperiod on diversity and abundance of metamorphosing juvenile amphibians. *Wetlands Ecology and Management* 1:3-11.

<sup>56</sup> Harris, L. D. and C. R. Vickers. 1984. Some faunal community characteristics of cypress ponds and the changes induced by perturbations. In *Cypress Swamps*. K. C. Ewel, and H. T. Odum (eds.). University Presses of Florida, Gainesville, FL, p. 171-185; Vickers, C. R., L. D. Harris, and B. F. Swindel. 1985. Changes in herpetofauna resulting from ditching of cypress ponds in coastal plains. *Forest Ecology and Management* 11:17-29.

<sup>57</sup> Laan, R., and B. Verboom. 1990. Effects of pool size and isolation on amphibian communities. *Biological Conservation* 54:251-262; Sjogren, P. 1991b. Genetic variation in relation to demography of peripheral pool frog populations (*Rana lessonae*). *Evolutionary Ecology* 5:248-271.

<sup>58</sup> Heine, G. 1987. Einfache Meß- und Rechenmethode zur Ermittlung der Überlebenschance wandernder Amphibien beim Überqueren von Straßen. Beihefte zu den Veröffentlichungen Naturschutz und Landschaftspflege Baden-Württemberg 41:473-479.

can also alter the breeding habits of amphibians. For example, building U.S. Highway 44 in 1963 caused toxic silt from roadfill to spill into the local aquatic environment, eliminating nearly all aquatic life downstream of the road.<sup>59</sup>

Recent studies also point to the role of global climate change in promoting potentially catastrophic impacts to amphibian populations. For example:

- Global climate change will result in changes to weather and rainfall patterns that can have significant adverse effects on amphibians. Drought can lead to localized extirpation. Cold can induce winterkill in torpid amphibians. It is possible that the additional stress of climate change, on top of the stresses already created by severe loss of habitat and habitat fragmentation may jeopardize many amphibian species.<sup>60</sup>
- Recent studies suggest that climate change may be causing global mass extinctions of amphibian populations. Particularly alarming is the fact that many of these disappearances are occurring in relatively pristine area such as wilderness areas and national parks.<sup>61</sup> One recent study suggests that climate change has allowed the spread of a disease known as chytridiomycosis which has led to extinctions and declines in amphibians. Climate change has allowed this disease to spread by tempering the climate extremes that previously kept the disease in check.<sup>62</sup> About two-thirds of the 110 known harlequin frog species are believed to have vanished during the 1980s and 1990s because of the chytrid fungus *Batrachochytrium dendrobatidis*. Other studies indicate that amphibians may be particularly sensitive to changes in temperature, humidity, and air and water quality because they have permeable skins, biphasic life cycles, and unshelled eggs.<sup>63</sup>

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<sup>59</sup> Mathews, R. C., Jr., and E. L. Morgan. 1982. Toxicity of Anakeesta Formation leachates to shovel-nosed salamander, Great Smoky Mountains National Park. *Journal of Environmental Quality* 11:102-106.

<sup>60</sup> Sjogren, P. 1993a. Metapopulation dynamics and extinction in pristine habitats: A demographic explanation. Abstracts, Second World Congress of Herpetology, Adelaide, Australia, p. 244; Sjogren, P. 1993b. Applying metapopulation theory to amphibian conservation. Abstracts, Second World Congress of Herpetology, Adelaide, Australia, p. 244-245.

<sup>61</sup> Pounds, J. A., and M. L. Crump. 1994. Amphibian declines and climate disturbance: The case of the golden toad and the harlequin frog. *Conservation Biology* 8:72-85; Lips, K. R. 1998. Decline of a Tropical Montane Amphibian Fauna. *Conservation Biology* 12:106-117; Lips, K., F.Brem, R. Brenes, J.D. Reeve, R.A. Alford, J. Voyles, C. Carey, L. Livo, A. P. Pessier, and J.P. Collins 2006. Emerging infectious disease and the loss of biodiversity. *Proceedings of the National Academy of Sciences* 103:3165-3170.

<sup>62</sup> Pounds, J.A., M.P.L. Fogden, J.H. Campbell. 2006. Biological response to climate change on a tropical mountain. *Nature* 398, 611-615.

<sup>63</sup> Carey, C., and M. A. Alexander. 2003. Climate change and amphibian declines: is there a link? *Diversity and Distributions* 9:111-121.

- Climate change may also affect amphibian breeding patterns.<sup>64</sup> Amphibians spend a significant part of the year protecting themselves from cold or shielding themselves from heat. They receive cues to emerge from their shelters and to migrate to ponds or streams to breed from subtle increases in temperature or moisture. As the earth warms, one potential effect on amphibians is a trend towards early breeding, which makes them more vulnerable to snowmelt-induced floods and freezes common in early springs. Some studies already indicate a trend towards earlier breeding in certain amphibian species.<sup>65</sup>
- Increases in UV-B radiation in the northern hemisphere due to ozone depletion is also having an adverse impact on amphibians.<sup>66</sup> One study suggests that ultraviolet-B (UV-B) radiation adversely affects the hatching success of amphibian larvae.<sup>67</sup> High levels of UV-B also induced higher rates of developmental abnormalities and increased mortality in certain species (*Rana clamitans* and *R. sylvatica*) than others that were shielded from UV-B.<sup>68</sup> UV-B also can have detrimental effects on embryo growth.

Given these stressors, the additional impacts of the Yazoo Pumps could be catastrophic for amphibian species in the project area.

#### **(4) The Yazoo Pumps Could Cause Significant Adverse Impacts to Bats**

FWS has initiated a status assessment on two species of bats found within the project area that are of special concern. In the southeast, both the *Corynorhinus rafinesquii* (Rafinesque's big-eared bat) and *Myotis austroriparius* (Southeastern myotis) use tree roosts and it is believed that hollow tupelo and cypress trees are extremely important to these species. Hydrologic changes that could affect these roosting resources could adversely impact these, and other bats found in the project area. The loss of aquatic insects from hydrologic changes, discussed above, could also have significant adverse impact on bats in the project area.

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<sup>64</sup> Carey, C., and M. A. Alexander. 2003. Climate change and amphibian declines: is there a link? *Diversity and Distributions* 9:111-121.

<sup>65</sup> Beebee, T. J. C. 1995. Amphibian Breeding and Climate. *Nature* 374:219-220; Blaustein, A. R., L. K. Belden, D. H. Olson, D. M. Green, T. L. Root, and J. M. Kiesecker. 2001. Amphibian breeding and climate change. *Conservation Biology* 15:1804-1809; Gibbs, J. P., and A. R. Breisch. 2001. Climate warming and calling phenology of frogs near Ithaca, New York, 1900-1999. *Conservation Biology* 15:1175-1178.

<sup>66</sup> Blumthaler, M., and W. Ambach. 1990. Indication of increasing solar ultraviolet-B radiation flux in alpine regions. *Science* 248:206-208; Kerr, J. B., and C. T. McElroy. 1993. Evidence for large upward trends of ultraviolet-B radiation linked to ozone depletion. *Science* 262:1032-1034.

<sup>67</sup> Blaustein, A. R., P. D. Hoffman, D. G. Hokit, J. M. Kiesecker, S. C. Walls, and J. B. Hays. 1994a. UV repair and resistance to solar UV-B in amphibian eggs: A link to population declines? *Proceedings of the National Academy of Science* 91:1791-1795.

<sup>68</sup> Grant, K. P., and L. E. Licht. 1993. Effects of ultraviolet radiation on life history parameters of frogs from Ontario, Canada. Abstracts, Second World Congress of Herpetology, Adelaide, Australia, p. 101.

Information on some recently completed bat surveys on Theodore Roosevelt National Wildlife Refuge Complex carried out by Alison S. McCartney, a Wildlife Biologist with the Bureau of Land Management is attached at Tab F.

#### **D. The Yazoo Pumps Could Cause Unacceptable Adverse Effects On Water Quality**

The Yazoo Pumps could harm water quality and drinking water supplies in the Yazoo Backwater Area in a number of ways.

##### **(1) The Pumps Would Destroy Wetlands and Wetland Functions Essential For Purifying Water**

The loss of wetlands and wetland functions would damage water quality and increase excess nutrient loading into non-wetland aquatic resources. “Wetlands help improve water quality by removing and retaining inorganic nutrients, processing organic wastes, and reducing suspended sediments from surface runoff before the runoff reaches open water. For example, wetlands have a tremendous capacity to retain or process excess nitrogen and phosphorus, which helps to reduce environmental problems that are associated with these excess nutrients, including dead zones, fish kills, and algal blooms. Riparian and forested wetlands are particularly effective at trapping pollutants and nonpoint source runoff before they reach streams, rivers, bayous, and lakes (Tiner 2005; Gilliam 1994; Brinson 1993; Walbridge 1993). In recognition of this important value, scientists have recommended substantial wetlands restoration to help reduce the size of the enormous hypoxic zone in the Gulf of Mexico.”<sup>69</sup>

##### **(2) The Yazoo Pumps Would Destroy Wetlands and Wetland Functions Essential For Recharging Groundwater, Which is the Primary Source of Drinking Water for Communities In the Yazoo Backwater Area**

Mississippi State University (MSU) reports that 85 percent of Mississippi’s population relies on groundwater as the sole source of drinking water.<sup>70</sup> As a result, the adverse impacts of the Yazoo Pumps on groundwater would affect important drinking water sources.

According to MSU, the alluvial aquifer in the Delta is just 30 to 40 feet below the ground surface, and more water is being taken out of that aquifer than is being naturally recharged.<sup>71</sup> MSU also reports that the dry summers of 2006 and 2007 have produced some “fairly significant declines, from 9-12 inches.”<sup>72</sup>

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<sup>69</sup> Scientist Letter Opposing the Yazoo Pumps.

<sup>70</sup> Mississippi State University Extension Service, <http://msucare.com/pubs/publications/p1976.htm> (visited May 5, 2008).

<sup>71</sup> Mississippi State University, Mississippi Agricultural News, *Dry summers are lowering Delta groundwater supplies*, November 1, 2007 (available at <http://msucare.com/news/print/agnews/an07/071101.html>)

<sup>72</sup> *Id.*

Loss of wetlands to the Yazoo Pumps could exacerbate this situation as wetlands can play a significant role in groundwater recharge. “Mineral soils found at the edges of many wetlands allow surface water to infiltrate into the ground, helping to recharge groundwater (Verry and Timmons 1982). Ground water recharge through wetlands can contribute significantly to recharge of regional water resources, particularly in large floodplain areas with long retention times, and in areas where wetlands have a high perimeter to volume ratio (Weller 1981; O’Brien 1988; Hook et al. 1988; Brown and Sullivan 1988; Taylor et al. 1990; Gosselink et al. 1990; Ewel 1990; Reilly et al. 1991; Brinson 1993; Demissie and Khan 1993). A forested wetland overlaying permeable soil can recharge 100,000 gallons of water per acre per day (Anderson and Rockel 1991), and other wetlands recharge groundwater at a rate of up to 20% of wetland volume per season (Weller 1981). This is particularly important in the Yazoo Pumps project area where rivers, streams, and bayous are experiencing significant low flow levels during the summer months.”<sup>73</sup> However, the Corps opted not to evaluate the potential impacts to groundwater.

The potentially significant impacts to groundwater should be taken into account in EPA’s 404(c) assessment.

**(3) The Yazoo Pumps Would Lead to Increased Use of Pesticides and Fertilizers That Would Damage Water Quality**

Pesticides and fertilizers have made waterways in the region unfit for fishing, swimming, and drinking, and virtually every farm field in the area is contaminated with at least the deadly pesticide DDT. Exposure to pesticides has been linked to some cancers and other diseases, including birth defects. Increases in nitrogen, phosphorus, and pesticide use would have both localized and downstream water quality effects which must be considered in the 404(c) evaluation.

The Mississippi Delta (including the project area) is subject to pervasive use of agricultural chemicals, particularly pesticides. This persistent use of agriculture chemicals has caused significant impairment of local waterbodies. Of the river miles assessed in the Yazoo Basin, 78% are contaminated by pesticides, and 83% are contaminated by nutrients.

Concentrations of DDT and toxaphene are so high in the project area that on June 26, 2001, the Mississippi Department of Environmental Quality (MDEQ) issued a fish consumption advisory for all waters in the project area due to high residual levels of DDT and toxaphene. DDT and toxaphene persist in the Delta at levels considerably higher than the levels found elsewhere in the nation.

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<sup>73</sup> Scientists Letter Opposing the Yazoo Pumps.

The Yazoo Pumps are specifically designed to drain wetlands so that landowners can increase agricultural production on marginal lands that have always flooded. Increased agricultural use, whether through an extended cropping season or an increase in cropped acreage, could result in an increase in the use of agricultural chemicals, which in turn could lead to increased contamination of the waterways in the project area. Even if additional lands are not cropped as a result of the Yazoo Pumps (which the Conservation Groups contend is extremely unlikely), the earlier planting on drier soils that would be promoted by the Yazoo Pumps would likely increase the amount of pesticides and fertilizers required.

The National Research Council of the National Academies has found that “fertilizers applied to increase agriculture yields can result in excess nutrients (nitrogen and to a lesser extent, phosphorus) flowing into waterways via surface runoff and infiltration into groundwater. Nutrient pollution can have significant impacts on water quality. Excess nitrogen in the Mississippi River system is known to be a major cause of the oxygen-starved “dead zone” in the Gulf of Mexico, in which many forms of marine life cannot survive.”<sup>74</sup>

In his comments on this proposed veto, Dr. R. Eugene Turner, one of the nation’s preeminent wetland scientists, provided the following critique of the potential adverse impacts of the Yazoo Pumps on water quality:

“The importance of the connection of temperate rivers and floodplains is well founded (Ward and Stanford 1995; Galat et al. 1998, Tockner et al 1999). Water quality is affected by these connections, including effects on gas emissions important to climate change and the creation of the hypoxic zone off the Louisiana coast. Both temperature and inundation are important factors affecting the processes. Inundation in the spring warms the water and cools soils, and changes redox-sensitive P cycling. Soils become anaerobic when flooded; microbes use carbon as an electron acceptor as nitrate is reduced to nitrous oxide or mineral nitrogen and lost as a gas (Lindau et al. 1994). Phosphorus, on the other hand, may become more available as the floodplain become anaerobic. The P attached to clays and iron and aluminum complexes in anaerobic soils become more readily available because of the reduction of iron and aluminum complexes and the release from phosphates attached to clays (Gambrell and Patrick 1974). The longer water the residence times, then the higher the phytoplankton uptake of both N and P, and the greater the removal of N through denitrification.

When drained there will be substantial changes to the soils which will encourage agricultural development and this development will use fertilizers. The fertilizers will leak from the system sooner or later. Water quality compromises are, therefore, unavoidable. Several studies, for example, have demonstrated a positive linear

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<sup>74</sup> The National Research Council of the National Academies. Water Implications of Biofuels Production in the United States. (October 2007). [http://books.nap.edu/catalog.php?record\\_id=12039](http://books.nap.edu/catalog.php?record_id=12039)

relationships between soil P and P in runoff (Sharpley 1995; Pote et al. 1996; Davis et al. 2005).

The net result is a loss in nutrient uptake/transformation, and an increase in the nutrient loading from agricultural uses of fertilizer and the ‘mining’ of nutrients stored in vegetation and soils (Turner and Rabalais 2003).<sup>75</sup>

A recent study by H.L. Schramm, et al. concludes that “longer retention of nitrogen- and phosphorus-rich flood water on the floodplain and in floodplain lakes, particularly during warmer seasons, should both accelerate and increase nitrogen and phosphorus removal from the water. Further, protracted inundation and warmer conditions would increase the diversity and abundance of aquatic biota and enhance reproduction and active feeding of fishes adapted to natural annual thermal and hydrological conditions.” The study also concludes that “restoring the floodpulse to historic conditions may reduce the downstream transport of nitrogen and phosphorus.”<sup>76</sup>

The Yazoo Pumps could also promote or magnify the growing trend towards increased corn production in the state of Mississippi or promote the production of corn in the project area. If this happened, fertilizer application would certainly increase (corn production requires high rates of nitrogen application), which could lead to significant water quality impacts.

Corn production is already on the rise in Mississippi. In 2007, 960,000 acres of corn were planted in Mississippi according to the USDA. The average number of acres of corn planted in Mississippi in the 10 preceding years was 459,000 acres. In 2006, there were only 340,000 acres of corn planted, demonstrating an enormous increase in corn planted in 2007.<sup>77</sup> Statistics on corn planting by county for 2007 are not yet available, but based on observations from farmers and other anecdotal data, it is likely that there was a major increase in corn production in the Yazoo Pumps project area in 2007. Data from the USDA already shows that acres planted in cotton in the Mississippi Delta declined in 2007; however, finalized data is not yet available to show that those cotton acres were supplanted by corn.

Increases in corn production are likely to be driven further by current subsidies and investments in the project area. There are currently three ethanol plants in Mississippi under construction and an additional two that are undergoing the permit application process.<sup>78</sup> Of the five planned ethanol facilities that will use corn as a feedstock, three are in the Mississippi Delta region – in Bolivar, Quitman, and Warren counties. Generally, ethanol-manufacturing plants try to buy all of

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<sup>75</sup> Comments of Dr. R. Eugene Turner submitted to the EPA docket on the Yazoo Pumps veto on April 23, 2008. Full citations to the studies referred to in this quotation are included in Dr. Turner’s comments.

<sup>76</sup> Schramm, H.L., Jr. et al. *Nitrogen and Phosphorus Sequestration in the Lower Mississippi River*. This study is summarized in the attached Annotated Bibliography and was submitted into the record.

<sup>77</sup> USDA National Agricultural Statistics Service. (Accessed January 20, 2008) <http://www.nass.usda.gov/>

<sup>78</sup> Mississippi Department of Environmental Quality. [http://opc.deq.state.ms.us/search\\_ai.aspx](http://opc.deq.state.ms.us/search_ai.aspx)

their corn needs within a 50-mile radius of their plant, making the Yazoo Pumps project area a prime location for supplying corn for ethanol facilities. The State of Mississippi also has what is considered to be one of the strongest state-level ethanol production incentives in the country, providing a subsidy of 20 cents per gallon for new producers, for up to 30 million gallons per year per producer and for up to 10 years.<sup>79</sup>

According to the Mississippi State University Extension Service, late planting is the most common problem in Mississippi corn production.<sup>80</sup> By removing flooding during the corn planting season, the Yazoo Pumps may increase corn planting and yields. In addition, corn that is less than 12 inches tall will generally not survive flooded/saturated conditions if the conditions persist for more than 48-96 hours. According to the Mississippi State University Extension Service, “Wet conditions hurt plant growth and reduce survivability because soil oxygen is depleted after about 48 hours of saturation. Soil saturation may persist even after floodwater recedes. Without oxygen, the plant cannot perform critical life sustaining functions.”<sup>81</sup>

Given the incentives and investments currently in place in Mississippi for corn production, the Yazoo Pumps could very well promote new or increased corn production in the project area. Areas already in corn may see greater yields, while areas that could not support corn in the past may be able to support corn with the Pumps in operation.

An increase in corn would almost certainly lead to an increase in fertilizer (and possibly pesticide) application. Corn requires high rates of nitrogen application. In fact, of all the crops that are grown for biofuels, the greatest application rates of both fertilizer and pesticides per acre are for corn.<sup>82</sup> The National Research Council states, “All else being equal, the conversion of other crops or non-crop plants to corn will likely lead to much higher application rates of nitrogen. Give the correlation of nitrogen application rates to stream concentrations of total nitrogen, and of the latter to the increase of hypoxia in the nation’s waterbodies, the potential for additional corn-based ethanol production to increase the extent of these hypoxic regions is considerable.”<sup>83</sup>

The overall effect could be a decline in water quality for water bodies within the project area, as well as water bodies downstream. Many water bodies, including the Yazoo River, are already listed on the 2006 Mississippi 303(d) list of impaired water bodies specifically due to nutrients.

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<sup>79</sup> Mississippi Legislature House Bill 1130. (2002) <http://billstatus.ls.state.ms.us/documents/2002/html/HB/1100-1199/HB1130SG.htm>

<sup>80</sup> Mississippi State University Extension Service. Corn Production: Planting Dates and Crop Development. <http://msucares.com/pubs/infosheets/is0866.htm>

<sup>81</sup> Mississippi State University Extension Service. Corn: Can corn survive flooded or saturated conditions? [http://msucares.com/crops/corn/corn\\_flood.html](http://msucares.com/crops/corn/corn_flood.html)

<sup>82</sup> The National Research Council of the National Academies. Water Implications of Biofuels Production in the United States. (October 2007). [http://books.nap.edu/catalog.php?record\\_id=12039](http://books.nap.edu/catalog.php?record_id=12039)

<sup>83</sup> *Id.*

### **E. The Yazoo Pumps Would Cause Unacceptable Adverse Effects On Recreation**

As discussed in the recreation studies in the attached Annotated Bibliography, healthy wetlands provide important recreational opportunities that provide significant economic benefits to businesses and communities in Mississippi and throughout the country. Access to recreational opportunities have also been shown to increase land values in Mississippi.

The damage to wetlands and the fish and wildlife that depend on them will adversely affect recreational opportunities in the Yazoo Backwater Area.

### **F. The Adverse Impacts of the Yazoo Pumps Cannot Be Mitigated**

The Corps claims that the mitigation it has proposed would “provide 100 percent compensation for all environmental impacts.” FSEIS at SEIS-140. However, there is no scientific evidence whatsoever that wetland losses at the scale of 67,000 to 200,000 acres can be effectively mitigated. To the contrary, the scientific literature is quite clear that mitigation is extremely difficult to carry out and often fails.

Importantly, even if mitigation at this scale were possible, the Corps’ current mitigation proposal will not work to replace the wetlands lost to the Yazoo Pumps. As the Scientists Letter Opposing the Yazoo Pumps makes clear, “[w]hile effective mitigation for wetland losses at this scale might theoretically be possible, in our experience effective mitigation is *not* possible under the typical approach to mitigation carried out by the Corps for its civil works projects.”<sup>84</sup> The many failings with the Corps’ mitigation proposal for the Yazoo Pumps are discussed below.

#### **(1) There Is No Scientific Evidence To Suggest That Wetland Losses At This Scale Can Be Effectively Mitigated**

The scientific literature clearly and undeniably demonstrates that wetlands mitigation is extremely difficult and often fails.<sup>85</sup>

In 2001, National Research Council’s Committee on Mitigating Wetland Losses, issued a report that addressed the question of “how well and under what conditions compensatory mitigation required under Section 404 is contributing toward satisfying the overall objective of restoring and maintaining the quality of the nation’s waters.” In its report, *Compensating for Wetland*

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<sup>84</sup> Scientists Letter Opposing the Yazoo Pumps, at 3 (emphasis in original).

<sup>85</sup> Copies of many of the studies and testimony cited in this section were submitted into the record with the comments submitted in 2000 on the draft SEIS by Earthjustice Legal Defense Fund; Sierra Club; Gulf Restoration Network; American Rivers; Center for Constitutional Rights (Mississippi); Concerned Parents of Leland County (Mississippi); Environmental Defense; Friends of the Earth; Mississippi River Basin Alliance; Mississippi Workers for Human Rights; Natural Resources Defense Council, and Taxpayers for Common Sense (referred to throughout these comments as the Conservation Organization Comments on the Draft SEIS).

*Losses Under the Clean Water Act*, the Committee concluded that mitigation typically was not working at all, and in other cases it was not working well.<sup>86</sup> The report found that mitigation required under the Corps' regulatory program is alarmingly far from achieving the goal of no net loss of wetlands.<sup>87</sup> One of the broader messages from the Committee's report was that the best way to improve compensatory mitigation results would be to reduce the reliance on it, because it is technically very challenging and highly unlikely to replace the naturally existing functions destroyed.

Three of the National Research Council panel members, including panel Chair, Dr. Joy Zedler, took a much more in-depth look at the many studies that evaluated mitigation success. Their results, published in an article in the *National Wetlands Newsletter* in 2001, found that the "actual amount of wetland impacts offset is only about 20 percent, meaning that the section 404 permitting program has been fostering an 80 percent net loss of wetlands."<sup>88</sup>

A 1996 study published in *Ecological Applications* concludes that "[b]ased on over a decade of survey results, the cumulative record of past mitigation projects remains undeniably poor overall, with disappointingly few examples of success."<sup>89</sup> The "sober reality [is] that under present mitigation policies and practices 'losses are likely to be uncompensated for and that what we call mitigation has a high chance of failure.'"<sup>90</sup>

The National Research Council has concluded that:

Attempts to restore forested wetlands of the Southeast (e.g., bottomland hardwoods and cypress swamps) have encountered difficulties related to the time required to replace mature trees, the lack of material to transplant, the lack of knowledge of how and when to carry out seeding or transplantation, (Clewell and Lea, 1989) and altered hydrology (drainage for conversion to agriculture) of the wetland area.<sup>91</sup>

Top policymakers from both EPA and the Corps recognize – and have testified to Congress – that the success of wetlands mitigation is questionable at best. According to Robert H. Wayland, then EPA's Director of the Office of Wetlands, Oceans and Watersheds, and Michael L. Davis, then Deputy Assistant Secretary of the Army for Civil Works:

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<sup>86</sup> National Research Council. *Compensating for Wetland Losses Under the Clean Water Act*. 2001.

<sup>87</sup> National Research Council, *Compensating for Wetland Losses Under the Clean Water Act*, 2001, at 2.

<sup>88</sup> R. Eugene Turner, et al., "Count It by Acre or Function—Mitigation Adds Up to Net Loss of Wetlands", *National Wetlands Newsletter*, November-December 2001.

<sup>89</sup> Margaret S. Race and Mark S. Fonesca, *Fixing Compensatory Mitigation: What Will It Take*, *Ecological Applications* (1996) pp. 94-101 at 97.

<sup>90</sup> *Id.*

<sup>91</sup> National Research Council, *Restoration of Aquatic Ecosystems*, (National Academy Press 1992) at 311.

Many mitigation projects have, in fact, failed due to one or more of the following reasons: poor siting and project design; inadequate monitoring programs; lack of adequate maintenance or remedial activities; and in some cases, failure of permittees to comply with the conditions of their permits.<sup>92</sup>

Scientific studies also demonstrate that there is a wholesale lack of data regarding the ability to fully restore the lost functional values of a complex bottomland hardwood wetland through mitigation. For example, the National Research Council has concluded that: “[t]he short time period within which forest restoration attempts have been monitored precludes an evaluation of their functional equivalency with natural reference systems.”<sup>93</sup> As a result, “mitigation efforts cannot yet claim to have duplicated lost wetland functional values.”<sup>94</sup> A 1996 study concludes that “there are few satisfactory methods for assessing replacement of the functions lost with the original wetland.”<sup>95</sup> Moreover, when monitoring to assess the success of mitigation is based on a relatively simple set of criteria, those criteria may or may not accurately reflect wetland function.<sup>96</sup>

While the Corps claims that preliminary monitoring data on mitigation in the Yazoo Basin “indicate that functional replacement is occurring as projected,” the wetland monitoring reports contained in the FSEIS contradict that claim. FSEIS Appendix 1 Mitigation at 1-52. Some of that preliminary data shows that tree seedling survival is less than expected, and much of the data collected is not measuring functional replacement and is not sufficient to determine whether functional replacement is actually occurring. Indeed, for at least two functionality parameters (changes in soil cation exchange capacity and the percent of altered soils), the monitoring reports merely “assumed that the soils in the assessment area were unaltered” such that those parameters were being attained. Moreover, as the FSEIS makes clear, “long-term data are required before conclusions can be made” regarding functional replacement, and such long-term monitoring data is not yet available. FSEIS Appendix 1 Mitigation at 1-52.

The Conservation Organizations have also been unable to discover any evidence whatsoever of experience with mitigation at the scale that would be necessary to mitigate the adverse impacts of the Yazoo Pumps. To the contrary, the typical mitigation project is far smaller, and potentially larger mitigation banks also have not demonstrated successful replacement of lost

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<sup>92</sup> Complete Joint Statement of Michael L. Davis, Deputy Assistant Secretary of the Army for Civil Works and Robert H. Wayland III, Director, Office of Wetlands, Oceans and Watersheds, Environmental Protection Agency, Before the Transportation and Infrastructure Committee, Subcommittee on Water Resources and Environment, United States House of Representatives, Wetlands Protection and Mitigation Banking, December 9, 1997.

<sup>93</sup> Restoration of Aquatic Ecosystems at 311-312.

<sup>94</sup> Fixing Compensatory Mitigation: What Will It Take at 95 (summarizing findings in Restoration of Aquatic Ecosystems).

<sup>95</sup> William J. Mitsch and Renee F. Wilson, Improving the Success of Wetland Creation and Restoration With Know-How, Time, and Self-Design, Ecological Applications (1996) pp. 77-83 at 77.s

<sup>96</sup> *Id.*

wetland functions and values (and indeed, their record appears no better than the record for individual projects).

According to the comments submitted into the record of this veto by Dr. R. Eugene Turner: “The experience the COE has with mitigation projects is, in general, for projects less than 100 acres. The size of 288 mitigation projects in California, Florida, Indiana, Ohio and Tennessee, for example, ranges from 1 to 23 acres (Sudol 1988; Fenner 1991; Allen and Feddema 1986; DeWeese 1994; Lowe et al. 1989; Robb pers. Comm. to NRC 2001; Wilson and Mitsch 1996; Morgan and Roberts 1999) and averaged 2.85 acres. The YRPP is, therefore, 70,000 times larger than the experience the COE has with mitigation projects. This conclusion also means that the COE experience with contiguous wetlands of this size is similarly non-existent.”

While all of our groups support wetlands restoration efforts, it is important to recognize that the success of restoration and mitigation must be measured in different ways. Mitigation is a promise to replace the lost acres, functions, and values of wetlands in exchange for permission to damage or destroy those wetlands. Restoration is an attempt to improve an already degraded wetland system. While the processes might be similar, the measurements of their relative degrees of success are not.

**(2) The Corps’ Proposed Mitigation Cannot Replace The Wetland Functions, Services, Or Acreage Lost To The Yazoo Pumps**

Even a cursory examination of the Corps’ proposed mitigation reveals that it will not – and cannot – replace the lost functions, values, and acreage of wetlands that would be drained and damaged by the Yazoo Pumps.

First, because (as discussed elsewhere in these comments) the FSEIS fails to accurately evaluate the full impacts of the Yazoo Pumps, the Corps cannot have properly analyzed whether mitigation could in fact offset those impacts, or how much mitigation and what type of mitigation would be required to do so.

Second, the Corps has not proposed anything remotely close to the amount of mitigation that would be necessary to even attempt to replace the wetland functions and acreage lost to the Yazoo Pumps. The Corps’ mitigation acreage calculations are flawed, and not properly justified.

At an absolute minimum, the Corps should be required to implement one acre of mitigation for each acre of wetlands impacted. Only in that way can the Corps have any hope of meeting its statutorily established “interim goal of no overall net loss of the Nation’s remaining wetlands base, as defined by acreage and function.” 33 U.S.C. § 2317(a)(1) (emphasis added). However, even one to one replacement would not be able to replace the wetland functions lost to the Yazoo Pumps.

The Corps, however, has proposed far less than one to one replacement, even for the wetlands that will be completely drained by the Pumps. The Corps inexplicably contends that just 10,662 acres of reforestation of frequently flooded agricultural lands – with no requirements to ensure wetland hydrology – will fully compensate the adverse impacts to 60,700 acres of wetlands (including the draining of 18,000 acres of forested wetlands and 8,300 acres of non-forested wetlands to the point that they will no longer be classified as wetlands under the Clean Water Act) that the Corps says will result from operation of the Yazoo Pumps.<sup>97</sup> When compared to the true extent of wetland impacts identified by EPA, the Corps' mitigation proposal is even more absurdly inadequate.

Perhaps as incomprehensible is the Corps' contention that all the wetland functions lost to the Pumps could be replaced by just 3,794 acres of reforestation of frequently flooded agricultural land. Equally unfathomable is the Corps' decision to reduce the amount of "mitigation" from the 2000 DSEIS by 2,358 acres, despite the fact that the 2007 FSEIS acknowledges far greater impacts than the DSEIS. In 2000, the Corps said that 12,980 acres of conservation easements would be required as a "minimum threshold" to mitigate the hydrologic changes caused by the Yazoo Pumps, even though no mitigation was actually mandatory under the 2000 DSEIS.<sup>98</sup>

As importantly, the Corps' mitigation proposal for the Yazoo Pumps cannot be sufficient because the Corps has not fully identified the extent of the project's impacts. As a recent decision by the U.S. District Court for the District of Columbia makes clear, the Corps "cannot reliably conclude that the selected project has minimized adverse impacts on aquatic ecosystems to the extent practicable when its habitat mitigation calculations are infected with an underestimate of the floodplain habitat impacted."<sup>99</sup>

Third, planting tree seedlings or seeds on frequently flooded farmlands is not wetlands mitigation and cannot guarantee the replacement of lost wetland functions and acreage. To mitigate for a lost wetland, the Corps must create, restore, or enhance a wetland.

The Corps, however, has not proposed any wetlands mitigation. Wetland functions include short-term water storage, long-term water storage, water velocity reduction, sediment detention, onsite erosion control, nutrient and dissolved substance removal, organic carbon export, groundwater recharge, and fish and wildlife habitat. Fully compensating for these lost wetland values requires far more than attempts to plant trees. Indeed, the Corps' proposal ignores the most crucial element of wetlands restoration – getting the hydrology right. As the National

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<sup>97</sup> The Corps proposes an additional 4,367 acres of reforestation to mitigate for past construction impacts at the Yazoo Pumps project site and remaining mitigation owed for construction of the Yazoo Area and Satartia Area Backwater Levee Projects. FSEIS at SEIS-137, SEIS-140.

<sup>98</sup> Draft SEIS, Main Report at 92. The Draft SEIS recognized "only" 23,200 acres of impacts to jurisdictional wetlands. Draft SEIS, Main Report at 85.

<sup>99</sup> *Env'l Defense v. U.S. Army Corps of Engineers*, No. 04-1575 JR at 23 (D.D.C. Sept. 13, 2007)

Research Council has concluded, both correct hydrology and species diversity are critical elements in restoring wetlands:

Natural forested wetlands may support hundreds of plant species, many of which thrive in the understory (91 percent of 409 species in one riverine forest were understory species). Old-growth forests are dominated by trees that gradually achieve a dominant role in the canopy and that are self-sustaining through their ability to reproduce in their own shade. It is not clear that such climax species can be successfully established in open sites, or whether their introduction must await development of seral (intermediate successional stage) plant communities. . . . In many cases, restoration of suitable hydrologic conditions will be necessary.<sup>100</sup>

The proposed mitigation includes no requirements to implement hydrological modifications or to otherwise ensure that the mitigation lands will in fact be wetlands. Instead, the FSEIS relies on a wholly unsupported conclusion that there is a “high probability” that the hydrology will be correct on lands covered by conservation easements or purchased in fee title for mitigation purposes. FSEIS, Appendix 1 Mitigation at 1-53.

This conclusion is particularly unjustifiable because the areas targeted for “mitigation” (lands located at the two year floodplain elevation and below) are areas whose hydrology will be affected by the Yazoo Pumps.

In addition, under the terms of the proposed conservation easements that are essential to the Corps’ mitigation plan, landowners can harvest trees planted pursuant to the conservation easements subject to the terms of an approved timber management plan. FSEIS Appendix 9 Real Estate at 5. It is well recognized that “the use of wetlands for any purpose involving the harvesting of the vegetation is bound to have a significant effect on the way the system functions.”<sup>101</sup> As a result, any functions and values that might be provided by the reforestation will not be provided in perpetuity.

The proposed conservation easement language also fails to require the actions (even in a general way) that the Corps claims will be carried out on conservation easement lands. As a result, the Corps would have no ability to require landowners to carry out the actions the Corps claims will be carried out to implement mitigation (and reforestation) on conservation easement lands. The suggested conservation easement language also clearly does not require that the landowners ensure that the conservation easements lands have – and retain – the appropriate wetland hydrology. See FSEIS Appendix 9 Real Estate at 5

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<sup>100</sup> National Research Council, *Restoration of Aquatic Ecosystems*, (National Academy Press 1992) at 311.

<sup>101</sup> *Wetlands* at 517.

Fourth, there is, in fact, no mitigation plan at all. Rather there is only a general description providing the barest outline of a mitigation proposal. The FSEIS states that mitigation plans will not be developed until after mitigation lands are identified. The general description of mitigation states merely that mitigation will consist of the reforestation of frequently flooded agricultural lands (and possibly some use of water control structures to establish winter waterfowl habitat). Attempts will first be made to implement mitigation through the purchase of conservation easements within the one and two year flood plain in the project area. If the full amount of easements cannot be purchased, then mitigation will be accomplished through the purchase of land in fee title. Purchase in fee title would first be attempted in the Yazoo-Mississippi Delta, but if sufficient agricultural lands were not available, the Corps would look elsewhere in the Mississippi Alluvial Valley.

Failure to include a detailed mitigation plan violates the provisions of 33 U.S.C. § 2283(d), and § 2036 of the Water Resources Development Act (WRDA) of 2007, Public Law 101-114, 121 Stat. 1092, § 2036 (Nov. 8, 2007).<sup>102</sup> The mitigation provision of WRDA 2007 is applicable to this project because the report was not finalized when WRDA was signed into law. Section 2036 prohibits the Corps from selecting any project alternative in a final report if the project does not meet the Act's mitigation requirements.

The WRDA 2007 mitigation provision provides clear guidance on the elements that must be included in a civil works project mitigation plan. These elements include: (i) the type, amount, and characteristics of the habitat being restored and a description of the physical actions to be taken to carry out the restoration; (ii) ecological success criteria based on replacement of lost functions and values; (iii) a description of the lands and interest in lands to be acquired for mitigation, and a basis for determining those lands will be available; (iv) a mitigation monitoring plan; and (v) a contingency plan for taking corrective action if mitigation is not demonstrating success.

WRDA 2007 also requires the Corps to implement not less than in-kind mitigation for Corps civil works projects, and 33 U.S.C. § 2283(d) also requires that bottomland hardwood wetland losses be mitigated in kind to the extent practicable. Neither of these requirements are being met for the Yazoo Pumps.

Fifth, the proposed monitoring is wholly insufficient to determine whether any implemented mitigation is in fact replacing lost wetland functions and values. Monitoring is limited to initial visual inspections followed only by remote sensing techniques. FSEIS at SEIS-78. Despite the fact that the proposed mitigation is driven by the goal of replacing lost functions, there will be no monitoring at all of functional replacement:

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<sup>102</sup> The provisions of § 2036 of WRDA 2007 have been codified at 33 U.S.C. §§ 2283, 2283a, and 2317b.

“The Vicksburg District will monitor to be assured that any water control structure furnished to the landowner is installed. Tree survival will be monitored visually by the Vicksburg District to ensure success in the early years; however, after successful establishment, monitoring of both the reforestation and water control structures will primarily be conducted by remote sensing techniques with visual onsite inspections, if warranted.” FSEIS, Appendix 1 Mitigation at 1-47 to 1-48.

The Corps cannot determine whether mitigation has successfully replaced lost functions without monitoring the mitigation to determine if lost functions have in fact been replaced. Visual and remote sensing “monitoring” cannot establish whether and how mitigation areas are functioning.

The proposed “monitoring” does not satisfy the requirements of § 2036 of WRDA 2007, which requires monitoring until the ecological success criteria have been met. It also does not satisfy the Corps’ regulatory requirements which require that monitoring be carried out until success is established for mitigation that the Corps commits to in a Record of Decision. 33 C.F.R. § 230.15; 40 C.F.R. §§ 1505.2, 1505.3.

Sixth, the proposed mitigation completely ignores the reality that wetlands mitigation is extremely difficult and often fails. To the contrary, the mitigation proposal assumes that the proposed mitigation will work and function perfectly to fully replace all lost functions and values of the wetlands damaged and destroyed. But, as discussed above, mitigation is not a panacea that makes all project impacts “disappear.”

Finally, the Conservation Organizations note that the Corps’ track record on mitigation is so abysmal that the Government Accountability Office found the Corps did not even bother to prepare mitigation plans for almost 70 percent of the projects it constructed between 1986 and 2001.<sup>103</sup> This record prompted Congress to enact the WRDA 2007 mitigation reforms, but those reforms have yet to be implemented by the Corps.

### **(3) The So-Called “Nonstructural Flood Damage Feature” Also Will Not Provide Positive Environmental Benefits**

Though not part of its mitigation plan, the Corps contends that its “nonstructural flood damage feature (reforestation) provides substantial environmental benefits in all categories.” FSEIS at SEIS-2. According to the Corps, these benefits will be realized by its plan to attempt to purchase conservation easements from willing sellers on “up to 55,600 acres of agricultural land primarily

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<sup>103</sup> United States General Accounting Office, *U.S. Army Corps of Engineers: Scientific Panel’s Assessment of Fish and Wildlife Mitigation Guidance*, GAO-02-574, May 2002 at 4. The Corps provided the GAO with mitigation planning information for 150 projects that the Corps says were authorized between the Water Resources Development Act of 1986 and September 30, 2001 and that received construction appropriations. Only 47 of those projects (or just 31 percent) included mitigation plans. *Id.*

at or below elevation 87.0 feet.”<sup>104</sup> FSEIS at SEIS-2 (emphasis added). The Conservation Organizations strongly disagree with the Corps’ assessment.

First, each and every one of the problems that infect the Corps’ claimed mitigation benefits also infect the Corps’ claimed benefits from its goal of reforesting open lands in addition to those required for mitigation, up to a total of 55,600 acres at or below the pump elevation of 87 feet.

Planting tree seedlings on frequently flooded agricultural lands does not create wetlands, and the conservation easements will not require landowners to modify the hydrology of their lands to help ensure the existence of wetland hydrology. There are no actual reforestation plans, but merely a general description that provides only the barest outline of what will be done. The Yazoo Pumps will inalterably change the hydrology of the very areas that are to be reforested through the conservation easements. Any trees planted pursuant to the conservation easements can be harvested via normal silvicultural practices, including clear cutting. This harvesting “is bound to have a significant effect on the way the system functions.”<sup>105</sup> And there is no way that the proposed monitoring (initial visual inspection, and primarily remote sensing thereafter) can in any way ensure that the environmental benefits claimed by the Corps are being achieved, or even that the terms of the conservation easements are being complied with.

Second, given the wholesale failure of the proposed mitigation to be able to replace the wetland functions and acres lost to the Pumps, and the Corps’ wholly inadequate assessment of impacts, it is difficult to understand how the additional acres of reforestation could possibly produce a net gain in environmental values.

This is particularly true since reforestation (above that required for mitigation) is a goal only and there is no guarantee that the non-mitigation reforestation easements will in fact be ever be purchased. Indeed, it is not at all clear that there are even enough acres of open land in private ownership below the 87 foot elevation that could be used for this purpose.

Reforestation may be even more difficult due to passage of Mississippi Senate Bill 2158, which gives the Board of Supervisors of Washington, Sharkey, Issaquena, Humphreys, Yazoo and Warren Counties the option to assess an annual fee of up to \$4 per acre for each acre of land that any landowner elects to place under a reforestation easement as a feature of the Yazoo Pumps project. FSEIS at SEIS-136. This could be a strong disincentive for obtaining reforestation.

There are additional substantial – and likely insurmountable – hurdles to purchasing the non-mitigation reforestation easements. Perhaps most notably, in 2000, FWS determined that in the project area there are fewer than 9,100 acres of agricultural land in private ownership below 87 feet NGVD. While the Corps disagrees with this assessment, it has not provided an assessment

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<sup>104</sup> The Corps does not attribute any environmental benefits to the Pumps themselves.

<sup>105</sup> *Wetlands* at 517.

of the amount of privately owned open land (that is not already subject to perpetual flowage or other easements) available for conservation easement purchase below 87 feet, and it has not provided such an assessment for lands within the 2-year floodplain.

The Corps does claim that 56,428 acres of open land “would potentially be available for perpetual conservation easement acquisition” with the 2-year floodplain (as defined with the Yazoo Pumps in operation). FSEIS, Appendix 1 Mitigation at 1-51. However, this open land was only “spatially identified” by the Vicksburg District Hydraulics Branch, and the Corps does not appear to have made any determination as to the number of these acres that are privately owned and thus potentially available for conservation easement purchase. *Id.*

Moreover, even if each and every one of these open acres was in fact in private ownership, the Corps still would have little to no hope of achieving the claimed “benefits” from this nonstructural reforestation component as the Corps would have to purchase conservation easements on virtually every single acre of this open land to reach its acreage goal. There is not a single piece of evidence in the FSEIS to suggest that the Corps would be able to do this, particularly since the Yazoo Pumps would minimize flooding on some of these acres, making them more likely to remain in – or be converted to – agricultural uses.

**G. Construction And Operation Of The Yazoo Pumps Would Violate Section 404 of the Clean Water Act And The 404(b)(1) Guidelines**

Construction and operation of the Yazoo Pumps would violate Section 404 of the Clean Water Act due to the magnitude and severity of the environmental impacts that would result from the project, the fact that those impacts could be entirely avoided by use of a wholly nonstructural flood damage reduction plan, and the Corps’ failure to require adequate compensatory mitigation.

In carrying out its civil works activities, the Corps must comply with the mandates of Section 404 of the Clean Water Act, and the Section 404(b)(1) Guidelines. 33 U.S.C. § 1323; 33 C.F.R. § 336.1(a). Critically, the 404(b)(1) Guidelines prohibit the Corps from proceeding with the Yazoo Pumps if:

- The project “will cause or contribute to significant degradation of the waters of the United States.” 40 C.F.R. § 231.10(c);
- A less damaging practicable alternative is available. 40 C.F.R. § 230.10(a);
- The project fails to adequately minimize and compensate for wetland and other aquatic resource losses. *See* 40 CFR 230.10(a)–(d); or

- The project evaluation fails to establish that the project will not have unacceptable adverse environmental impacts. 40 C.F.R. § 230.1(c).

As EPA notes in the Proposed Determination, the first three of these requirements “are particularly important to evaluating the unacceptability of environmental impacts in this case.” Proposed Determination, 73 Fed. Reg. at 14812.

**(1) The Yazoo Pumps Would Cause or Contribute to Significant Degradation of Waters of the United States**

Under the Guidelines, effects that contribute to significant degradation include:

- (1) Significantly adverse effects of the discharge of pollutants on human health or welfare, including but not limited to effects on . . . fish, shellfish, wildlife, and special aquatic sites.
- (2) Significantly adverse effects of the discharge of pollutants on life stages of aquatic life and other wildlife dependent on aquatic ecosystems . . .
- (3) Significantly adverse effects of the discharge of pollutants on aquatic ecosystem diversity, productivity, and stability. Such effects may include, but are not limited to, loss of fish and wildlife habitat or loss of the capacity of a wetland to assimilate nutrients, purify water, or reduce wave energy; or
- (4) Significantly adverse effects of discharge of pollutants on recreational, aesthetic, and economic values.

40 C.F.R. § 230.10(c). As discussed above, the adverse impacts of the Yazoo Pumps are so dire that they unquestionably would cause or contribute to significant degradation of the nation’s waters. The Yazoo Pumps would cause significant and severe impacts to virtually every factor identified above.

**(2) Less Damaging, Practicable Alternatives Are Clearly Available**

As discussed in detailed in Section H below, the Yazoo Pumps are not necessary and are contrary to national wetlands and agricultural laws and polices. A host of less damaging practicable alternatives that could address both needed restoration and the very limited flood damages in the project area have been presented to the Corps over the past decade. Most of these alternatives would have no adverse wetland impacts whatsoever. Regrettably, these alternatives were dismissed out of hand. Because less damaging practicable alternatives clearly

exist, the Yazoo Pumps plan violates the Clean Water Act, and the impacts of the Yazoo Pumps are undeniably unacceptable.

**(3) The Yazoo Pumps Project Fails to Adequately Minimize and Compensate for Wetland and Other Aquatic Resource Losses**

The Corps has not taken all appropriate and practicable steps to minimize the potential adverse impacts of the Yazoo Pumps. The impacts of all projects not otherwise prohibited by the 404(b)(1) Guidelines must be minimized to the maximum extent practicable. The Guidelines require that impacts must first be avoided. Impacts that cannot be avoided are to be minimized by modifying the project. If modification is not possible, the impact should be rectified by restoring the environment. 40 C.F.R. § 230.10(d).

The Corps has taken none of these steps. For example, the Corps could completely avoid all adverse impacts of this project by selecting a wholly non-structural flood damage reduction project. However, the Corps dismissed such an approach out of hand. The Corps could have attempted to minimize impacts by selecting an alternative pumping regime (though we assert that any pumping regime would cause so much harm that it must be prohibited), but instead the Corps selected an alternative that EPA described as “one of the most environmentally damaging alternatives of 35 proposals that were initially developed during the consensus-building process.”<sup>106</sup> Finally, the Corps could have recommended a much more effective mitigation plan (though as noted above, there is no scientific evidence to suggest that mitigation at this scale is possible). Instead, as discussed above, the Corps proposed mitigation that is woefully inadequate.

**(4) The Corps Has Not Carried Out the Review Necessary to Demonstrate that the Yazoo Pumps Will Not Have Unacceptable Adverse Environmental Impacts**

The 404(b)(1) Guidelines make it clear that “fill material should not be discharged into the aquatic ecosystem, unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern.” 40 C.F.R. § 230.1(c). To make this assessment, the Corps must:

- determine “the nature and degree of effect that the proposed discharge will have, both individually and cumulatively, on the structure and function of the aquatic ecosystem and organisms.” 40 C.F.R. § 230.11(e) (emphasis added).

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<sup>106</sup> Final Fish and Wildlife Coordination Act Report at 32.

- “[d]etermine the nature and degree of effect that the proposed discharge will have, individually and cumulatively” on a number of factors, including “water, current patterns, circulation including downstream flows, and normal water fluctuation” and “the structure and function of the aquatic ecosystem and organisms.” 40 C.F.R. §230.11(b) and (e).
- consider secondary impacts, which are “effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material.” 40 C.F.R. §230.11(h).
- consider the impacts described in 40 C.F.R. § 230.10(c) (and discussed earlier in this section) to determine whether the project would cause or contribute to significant degradation of the waters of the United States (and thus be prohibited).

The Corps has not properly carried out any of these necessary evaluations, and as a result, has not accounted for the full range of aquatic impacts. Missing completely from both the FSEIS and the 404(b)(1) evaluation are assessments of the impacts of the Yazoo Pumps on: wetlands sustained by sources other than backwater flooding (such as rainfall); short-hydroperiod wetlands; the hydrologic regimes and flow levels of non-wetland aquatic systems, including the many rivers, streams, lakes, and bayous in the project area; and groundwater and groundwater recharge.

#### **H. Practicable Alternatives That Would Cause No Wetland Damage Clearly Exist, As Do Practicable Alternatives That Would Cause Only Minimal Wetland Losses**

The Yazoo Pumps are an agricultural drainage project cloaked in the mantle of providing flood protection for small communities in the Yazoo Backwater Area. However, the Yazoo Pumps are not needed to protect communities from residential flooding, and the project’s true purpose – agricultural drainage – is contrary to federal law and policy, and could actually hurt agricultural production in the Yazoo Backwater Area.

As a result, this project is neither necessary nor appropriate and must not be constructed. A host of readily available alternatives have been proposed to the Corps over the past decade that would address both needed restoration and further minimize the already limited flood damages in the project area. Most of these alternatives would have no adverse wetland impacts whatsoever. The remaining alternatives would have vastly fewer, and likely minimal, wetland impacts.

Rather than examine these reasonable and far less damaging approaches, FWS noted that the Corps chose “one of the most environmentally damaging alternatives of 35 proposals that were initially developed during the consensus-building process. Reasonable alternatives involving

nonstructural, flood damage reduction features have been rejected without being thoroughly evaluated.”<sup>107</sup>

The 404(b)(1) Guidelines prohibit the Corps from proceeding with a civil works project that would adversely impact wetlands if a less damaging practicable alternative is available. “An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.” 40 C.F.R. § 230.10(a). As noted above, EPA has said that the existence of less damaging practicable alternatives is “particularly important to evaluating the unacceptability of environmental impacts in this case.” Proposed Determination, 73 Fed. Reg. at 14812.

Less damaging practicable alternatives clearly exist, and as such the Yazoo Pumps plan violates the Clean Water Act, and the impacts of the Yazoo Pumps are undeniably unacceptable.

**(1) The Yazoo Pumps are Not Needed to Protect Against Residential Flooding**

The first step in identifying a reasonably practicable alternative is to properly define a project’s purpose and need. The Corps has done neither in its proposal for the Yazoo Pumps.

National Flood Insurance data, the lack of residential flooding in the Yazoo Backwater Area during the recent Mississippi and Yazoo River flooding, and anecdotal evidence make it clear that residential flooding in the Yazoo Backwater Area is extremely limited. As a result, the Yazoo Pumps are not needed to protect against residential flooding.

Moreover, even if residential flooding were a significant problem (which it is not), the Yazoo Pumps are not designed to protect the small communities in the Yazoo Backwater Area. The Pumps are specifically designed to drain wetlands in the lower reaches of the Yazoo Backwater Area, and there is no evidence in the record to suggest that they would work to reduce residential flooding.

**(a) National Flood Insurance Data Demonstrates That Residential Flooding Is Extremely Limited In The Yazoo Backwater Area**

Federal Emergency Management Agency (FEMA) National Flood Insurance data obtained by American Rivers, and anecdotal evidence, demonstrate that residential flooding in the project area is very limited, and has been since completion of the Yazoo Backwater Levee in 1978.<sup>108</sup>

The National Flood Insurance Program allows property owners to purchase flood insurance at subsidized rates. To participate in the National Flood Insurance Program, each county or

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<sup>107</sup> *Id.* at 32.

<sup>108</sup> The FSEIS confirms that construction of the Yazoo Backwater Levee was completed in 1978. FSEIS at SEIS-131.

community is required to adopt and enforce floodplain management ordinances that require that residential buildings be elevated to or above the level of the 100-year flood. National Flood Insurance Program Website.

All 7 counties/parishes and 19 communities in the project area are participants in the National Flood Insurance Program.<sup>109</sup> Consequently, no residential building in the project area that was built or substantially improved after the date of entry into the National Flood Insurance Program should be below the 100-year flood elevation. Sharkey County, Rolling Fork, Cary, and Anguilla joined the National Flood Insurance Program in 1986, Mayersville joined in 1987, and the unincorporated areas of Issaquena County joined in 1990. National Flood Insurance Program Community Status Book. Any properties out of compliance with the National Flood Insurance Program requirements could be protected from the 100-year flood by being brought into compliance at much less cost than constructing the Yazoo Pumps.

While the FSEIS states that many people in the backwater area have no insurance at all, including no flood insurance,<sup>110</sup> any property encumbered by a mortgage within the 100-year flood elevation in the project area must have flood insurance through the National Flood Insurance Program.

FEMA provided American Rivers with flood insurance claim information for properties that could be geo-coded with certainty to the Yazoo Pumps project area, as defined by the Corps, for the 24 year period from 1979 to 2002. Flood insurance data for years prior to 1979 was not requested because the on-the-ground conditions changed substantially when the Yazoo Backwater Levee was completed in 1978. Claims data prior to 1979 would not be representative of the current flooding conditions in the Yazoo Backwater Area.

The FEMA data obtained by American Rivers shows that during the 24-year period from 1979 to 2002, only 62 properties within the Yazoo Pumps project area filed flood insurance claims under the National Flood Insurance Program. Collectively, these properties filed 209 claims for damages totaling \$1.664 million.

At that rate, it would take more than 3,173 years to recoup the \$220 million construction investment in the Yazoo Pumps. To put this in perspective, if the Yazoo Pumps had been built the year Julius Caesar was killed on the floor of the Roman Senate (44 B.C.), it would still be another 1,122 years before the flood damages in the project area would equal the cost of the Yazoo Pumps. There are far more cost-effective ways to address the very limited residential flooding problems in this region.

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<sup>109</sup> This information was contained in the Draft SEIS. Draft SEIS Main Report ¶136 at 55; Draft SEIS Appendix 7 ¶¶ 6 at 7-2 and ¶ 8 at 7-3.

<sup>110</sup> FSEIS, Appendix 8, Problem Identification/Socioeconomic Profile/ Environmental Justice at 8-50 to 8-51.

The FEMA data provided to American Rivers shows an average flood damage rate of \$69,336 per year for the entire Yazoo Backwater Area. However, even this number is too high to be used as a proper surrogate of flood damages to structures that might be avoided by the Yazoo Pumps. The \$205,961 in flood damage claims filed in 1991 (which are included in this average flood damage rate) could not have been prevented by the Pumps because the Corps acknowledges that the Pumps could not have operated during this flood event. From 1979 to 2002, just 2 to 36 claims were filed in any single year.

The National Flood Insurance data provided to American Rivers covers years with some of the highest levels of flooding in the project area. The flood insurance data set covers the years with the 4<sup>th</sup>, 5<sup>th</sup>, 8<sup>th</sup>-12<sup>th</sup>, 16<sup>th</sup>, 20<sup>th</sup>-23<sup>rd</sup>, 27<sup>th</sup>, 34<sup>th</sup>, 39<sup>th</sup>, 43<sup>rd</sup>, 48<sup>th</sup>, 50<sup>th</sup>, and 51<sup>st</sup> worse floods on record out of the 55 floods of record since 1943.

While the FEMA flood insurance data obviously does not capture all flood damages in the project area, it does provide an effective surrogate for flood damages.<sup>111</sup>

As noted above, the first step in identifying reasonably practicable alternative is to properly define a project's purpose and need.

**(b) Recent Flooding In Mississippi Demonstrates That Flooding Is Not A Significant Problem In The Yazoo Backwater Area**

The State of Mississippi experienced damaging floods along the Mississippi and Yazoo Rivers in March, April, and early May 2008. While significant flooding occurred in areas surrounding and downstream from the Yazoo Backwater Area, as discussed in detail below, there was no significant flooding in the Yazoo Backwater Area during this time. A series of aerial photographs taken both inside and outside the Yazoo Backwater Area on April 4, 2008, make this exceedingly clear.<sup>112</sup>

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<sup>111</sup> The flood insurance data included in the FSEIS does not provide an accurate surrogate for flood damages in the project area. First, the data covers 1978 through 2004, and thus includes claims from 1978 that were filed before completion of the Yazoo Backwater Levee (the data also covers three years more than the data provided to American Rivers). FSEIS, Appendix 8 at 8-52. Second, the total flood insurance claim payouts included in the FSEIS include claims from areas located outside the project area, including claims from locations on the river side of the Mississippi River mainline levees. This data cannot be used to assess total flood insurance payments in the project area. It also cannot be used to assess average flood insurance payments per claim, because the total number of properties reporting claims include only properties inside the project area, while the total claim payouts include claims for additional properties located outside the project area. Personal communication between American Rivers and the Corps of Engineers, January 18, 2008. However, even the inflated flood damage payout information provided by the Corps shows just \$4.642 million in flood damages over a 27-year period.

<sup>112</sup> American Rivers submitted these aerial photographs (marked to show precisely which areas are inside and outside the project area) into the record for this veto process on May 1, 2008. The photographs were taken by the U.S. Fish and Wildlife Service.

Despite the lack of significant flooding in the Yazoo Backwater Area during this recent flood – and despite that fact that the Yazoo Backwater Area is the only area that would see any reduction of water levels with the Yazoo Pumps in operation – this is precisely the type of flood event that would trigger operation of the Yazoo Pumps. Had the Pumps been constructed, the Corps would have turned them on because the flood gates at the Steele Bayou Flood Control Structure were closed when water on the landside of that structure reached 87 feet. This could have made flooding outside the Yazoo Backwater Area even worse, as the Pumps would have been sending a steady stream of 6 million gallons of water a minute into the already flooded Yazoo and Mississippi Rivers.

On April 17, 2008, the Mississippi River crested at Greenville at 57.4 feet, or just 0.8 feet below the 100-year flood of 1973. Water levels crested on the riverside of the Steele Bayou Flood Control Structure (which is downstream from Greenville and just outside the project area) on about April 22, 2008 at 100.1 feet, or just 0.2 feet below the 100 year flood of 1973.<sup>113</sup>

However, when the Mississippi River was cresting at Greenville, water in the Yazoo Backwater Area had not even reached the 2 year flood plain elevation, the area with a 50% chance of flooding every year. On that day (April 17), water on the landside of the Steele Bayou Flood Control Structure had reached just 90.8 feet; the 2 year floodplain is at 91 feet. By April 22, 2008, when water levels were cresting on the river side of the Steele Bayou Flood Control Structure, water in the Yazoo Backwater Area had just reached the 2 year floodplain elevation of 91 feet.

That same day (April 22), Peter Nimrod, Chief Engineer for the Mississippi Levee Board, noted that “[e]verything on the river side of the levee is inundated; on the protected side, everything is looking great.”<sup>114</sup> According to Peter Nimrod, no homes in the backwater area would be affected unless water reached 94 feet – 3 feet higher than it was on April 22.<sup>115</sup>

By contrast, significant flooding did occur outside the project area. For example, on April 4, a 10-mile stretch of MS Highway 465 just south of the project area (on the river side of the Steele Bayou Flood Control Structure) was closed because of flooding from the Mississippi River. Many other areas in Mississippi also experienced flooding, including Vicksburg and areas on the river side of the Mississippi mainline levees.

On April 24, 2008, Governor Haley Barbour requested a federal flood disaster declaration for Bolivar, Warren, Washington, and Wilkinson counties due to extensive flooding that had

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<sup>113</sup> During the 1973 flood, water in the Yazoo Backwater Area had reached a level of 101.5 feet. Construction of the Yazoo Backwater Levees in 1978 addressed most of the flooding problems in the Yazoo Backwater Area.

<sup>114</sup> Clarion Ledger, FEMA assesses Vicksburg flooding, April 22, 2008 (available at <http://www.clarionledger.com/apps/pbcs.dll/article?AID=2008804220370>)

<sup>115</sup> Vicksburg Evening Post, April 16, 2008 (“At 94 feet we’ll start to see homes flooded in the backwater area.”)

disrupted commerce and affected or destroyed 343 homes in the four county area.<sup>116</sup> Neither Sharkey nor Issaquena, the counties that would primarily be affected by the Yazoo Pumps and the lowest lying counties in the Yazoo Backwater Area, were included in this declaration. They were not included, because they did not suffer from any significant flooding.

Faced with this reality, project proponents have recently argued that the situation in the backwater area could be a lot worse if there were heavy rains in the Yazoo Backwater Area.<sup>117</sup> However, this claim – like so many others raised by the proponents of the Yazoo Pumps – must be seriously questioned. Rainfall at Rolling Fork (in the backwater area) was 41% above average during April. Rolling Fork received 7.73 inches of rain in April, versus its normal average of 5.40 inches of rain.<sup>118</sup> Despite the fact that the Steele Bayou Flood Control Structure was closed during the entire month of April, this significantly above-average rainfall did not cause major flooding in the backwater area.

As another point of reference, during the 100-year flood of 1973, flood levels on the landside of the Steele Bayou Flood Control Structure (within the Yazoo Backwater Area) were actually higher than flood levels on the riverside of that structure (outside the project area). The Yazoo Backwater Levees were constructed to stop that from happening again, and as discussed above, there has not been a significant flooding problem in the Yazoo Backwater Area since completion of those levees in 1978. The Yazoo Backwater Area receives additional protection from Mississippi River and Yazoo River flooding by the Steele Bayou Flood Control Structure, the Mississippi River Mainline Levees, and by levees along the Will M. Whittington Auxiliary channel and the Yazoo River.

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<sup>116</sup> Office of Mississippi Governor Haley Barbour, Press Release “Governor Barbour Requests Federal Disaster Declaration for Flooded Counties”, April 24, 2008, available at <http://www.governorbarbour.com/news/2008/apr/DisasterDeclaration4.24.08.htm> (last visited May 2, 2008).

<sup>117</sup> Chris Joyner, Proponents point to flooding, Clarion Ledger, May 1, 2008 (“Federal officials on either side of the pumps project agree that the vast majority of the flooding would be unaffected if the pumps were in place today, but Kent Parrish, senior project manager of the Yazoo Backwater Project for the U.S. Army Corps of Engineers, said that could change with the weather. About 300,000 acres in the Yazoo Backwater - mostly unoccupied forest and agricultural land - is underwater, but Parrish said if the basin were to take in another 2 inches of rain, flooding could begin pouring into homes.”), available at <http://www.clarionledger.com/apps/pbcs.dll/article?AID=/20080501/NEWS/805010367/1001/news>.

<sup>118</sup> Accuweather, April 2008 data for Rolling Fork, MS at <http://www.accuweather.com/forecast-climo.asp?partner=accuweather&traveler=1&zipChg=1&zipcode=39159&metric=0&mnYr=4/1/2008> (last visited May 3, 2008).

**(c) Anecdotal Information Confirms That Residential Flooding Has Not Been A Significant Problem Since Completion Of The Yazoo Backwater Levees**

A local newspaper within the Yazoo Backwater Area, the *Deer Creek Pilot* concurs that residential flooding has not been a significant problem since completion of the Yazoo Backwater levee. According to the *Deer Creek Pilot*, at least one project proponent who has talked about the importance of the Yazoo Pumps for protecting people from flooding actually knows of no one in either Sharkey or Issaquena county whose homes flood today. The lack of residential flooding was confirmed by the U.S. Postal Service's local rural mail carrier:

“Contacted Feb. 18 at her home, located on high ground above Deer Creek in Cary, Johnson said she is personally unaware of any Sharkey or Issaquena county family which actually must deal with floodwaters in its home today.

“To be honest with you,” Johnson said, “I know of one or two who have to leave because of the water, but I can't actually say of anyone who gets water in their house. When the water comes up to the houses, they move out. I don't know of one that gets water in their home.”

Johnson, who said she moved back to Sharkey County from Chicago in 1995, said she has, “heard stories from my family about how bad it used to be.”

When asked if she had learned through her South Delta Flood Control Committee role of occupied homes flooding within the last 20 years—since the completion of the Backwater Levee in 1980—Johnson said, “that project helped a lot.

It doesn't get as bad.” Echoing that evaluation was Linda Winslow, the U.S. Postal Service rural mail carrier, whose route has been the lower part of Sharkey and Issaquena counties for the past 18 years.

Winslow said that while some dwellings on her twin county rural mail route used to periodically be affected by backwater flooding, she knows of no one which is today.”

Winslow said she remembers two then occupied homes which in previous years were subject to flooding, “in the really bad years,” but that both are “vacant today.”

“There used to be one trailer,” in rural Issaquena County which Winslow said took on water during bad backwater flooding years, but that its owner, “moved it across the road where it is higher, and it doesn't flood now.”

There are, of course, a number of structures—mostly recreational club houses and cabins, which are located on the river side of the Mainline Miss. River Levee on or near lakes Albermarle and Chotard, and which are subject to high water events. However, in that the Yazoo Pump would evacuate backwater from the land side of the levee, back over it to the river side, it is difficult to see how its operation would provide flood protection to any structure on the west side of the levee.”<sup>119</sup>

**(2) Agricultural Drainage Is Not An Appropriate Project Purpose, And Scientific Evidence Shows That The Pumps Could Actually Damage Agricultural Production In The Project Area**

Since the Corps recognizes that more than 80 percent of the alleged benefits from the Yazoo Pumps benefits will come from increased agricultural production, it is clear that agricultural drainage is the project’s primary purpose. As EPA is well aware, draining wetlands to promote increased agricultural production is an archaic concept from another era and is in direct conflict with current federal policy. It cannot qualify as an appropriate project purpose for assessing reasonably practicable alternatives under the Clean Water Act.

Moreover, a recent scientific study strongly suggests that the Yazoo Pumps would harm – not help – agricultural production in the Yazoo Backwater Area.<sup>120</sup>

This study looked at the riverine hydrological and regional climatic regime relationships to agriculture (cotton, soybeans) and the principal riverine fish stocks in the upper Yazoo River basin. The study looked at 31 years of data (from 1964 to 1994) to compare flooding in the study area with soybean and cotton production. It found that “no factor associated with flood events adversely influence production of cotton and soybeans. However, with regard to soybeans, the amount of area flooded two years prior to a crop was positively related to soybean yield. From a long-term perspective therefore, the data suggest that flooding may benefit agricultural enterprises associated with soybean production.”<sup>121</sup> The study also found that cotton yield was positively correlated with maximum area flooded during the same year, noting that this was likely due to increased soil moisture which benefits cotton production. This was true even though floods resulted in fewer acres of cotton being planted during flood years.<sup>122</sup>

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<sup>119</sup> Ray Mosby and Natalie Perkins, Yazoo Pump: Whose homes here are flooding?, Deer Creek Pilot, February 27, 2003. As noted above, the FSEIS confirms that construction of the Yazoo Backwater Levee was completed in 1978, not 1980 as indicated in this article. FSEIS at SEIS-131.

<sup>120</sup> Jackson, D. C. and Q. Ye. 2000. Riverine fish stock and regional agronomic responses to hydrologic and climatic regimes in the upper Yazoo River basin. Pages 242-257 in I. G. Cowx, Editor. Management and Ecology of River Fisheries. Fishing News Books. Blackwell Science. London. This study was submitted into the record for the veto process on May 5, 2008, and is summarized in the annotated scientific bibliography attached to these comments.

<sup>121</sup> *Id.*

<sup>122</sup> *Id.*

The study did note, however, that a different pattern appeared to emerge over shorter time periods “which may explain the public perception that flooding adversely impacts agriculture in the area. During the 5 year period from 1990-1994, high precipitation was negatively related to area planted in cotton and the percent of the area planted in soybeans that was actually harvested. However, flooding during this period did not significantly affect overall yield of cotton and soybeans.”<sup>123</sup> And again, there was a positive correlation between cotton yields and the maximum area flooded during the same year.

That same study also shows that flooding benefits fisheries in the area, finding a positive relationship between flooding and positive fish stock characteristics, which the study defines as more and bigger fish. The study also noted that much of the productive potential for fisheries in floodplain river ecosystems is determined by the dynamics of overbank flooding and riparian vegetation.<sup>124</sup>

Governor Haley Barbour recently stated on Mississippi Public Radio that even during the 100-year flood of 1973, farmers had good soybean crops. Indeed, we understand that many farmers prefer to plant after floods because it is cheaper to do so. Post-flood planting reduces the amount of chemicals that must be applied to the land to clear the fields, and reduces the amount of fertilizer needed due to the nutrients provided by the flooding.

In light of this information, it is highly likely that the Yazoo Pumps would not even satisfy its improper purpose of promoting increased agricultural production.

**(3) Reasonably Practicable Alternatives Include The Purchase Of Flooding And Conservation Easements, Accelerated Use of WRP and CRP Programs, Wetland and Floodplain Restoration, Targeted Flood Proofing, Sewer and Water Infrastructure Improvements, And Economic Stimulus Aid**

A number of reasonably practicable alternatives that would cause no, or far less damage, to wetlands have been suggested to the Corps over the years. These alternatives have been proposed by EPA, FWS, conservation organizations, and concerned individuals. While these alternatives were rejected by the Corps with little or no evaluation, they were and remain eminently practicable.

For example, in September 2000, EPA recommended as an alternative to the Yazoo Pumps, an initiative that would direct federal investments in the Lower Yazoo Basin toward a broad range of Delta and Mississippi residents; ensure greater public health protections for all residents of the Basin; improve public safety through sustainable floodplain management; help ensure both a sustainable environment and a diversified economy; and provide educational and recreational

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<sup>123</sup> *Id.*

<sup>124</sup> *Id.*

opportunities to Mississippi residents and to visitors to the region. EPA estimated that this entire initiative, which would benefit far more than a handful of large landowners, could be carried out for less than the construction costs of the Yazoo Pumps. That initiative included:

- Accelerated Wetlands Reserve and Conservation Reserve Programs – there is great interest in enrolling more lands into these programs than are allocated for the region;
- Purchase of flooding easements – the Corps currently owns permanent flooding easements on 19,463 acres of land in the Yazoo Backwater Area;
- Purchase of conservation easements;
- Targeted flood proofing to protect urban communities at risk from flooding, including targeted elevation of homes, businesses and roads, and voluntary relocation;
- Sewer and water infrastructure improvements;
- Water quality monitoring and water quality education; and
- Economic stimulus focused on promoting nature based tourism, including a Delta Interpretive Center.

In its 2006 Final Fish and Wildlife Coordination Act Report, FWS recommended a combined structural/nonstructural alternative that contained the following elements and features:

- Floodplain and wetland restoration in the Yazoo Backwater Area;
- Designation of a spatially explicit Nonstructural Flood Damage Reduction Zone (NSFDRZ) that encompasses the two year flood frequency event;
- Purchase of perpetual conservation easements on both cleared and forested lands;
- Reintroduction of historic Mississippi River backwater flows into the Yazoo Backwater Area to the 87-foot elevation; and
- Targeted flood proofing and small scale flood protection projects as necessary to provide Project Design Flood protection for the Cary/Rolling Fork/Anguilla area.

**(4) Reasonably Practicable Alternatives Include The Use of Hazard Mitigation Options That Are Currently Available – And Already Funded – To Help Reduce Any Urban Flood Damages**

In addition to the many alternatives discussed above, reasonably practicable alternatives include the use of flood hazard mitigation options for flood prone structures. Such programs are currently available to the State of Mississippi, local communities, and individual residents and businesses in the Yazoo Pumps Project Area – and the State of Mississippi has a significant amount of money set aside to implement those options.

These include programs under the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988<sup>125</sup> (including the Hazard Mitigation Grants Program and the Flood Mitigation Assistance Program), and the Federal Emergency Management Agency's Pre-Disaster Mitigation Program<sup>126</sup> (the "PDM Program").

These programs, along with FEMA's Public Assistance program, provide funding, both before and after flood disasters, for mitigation of flood risks to residences and businesses (and for public facilities, including roads and utilities). The Hazard Mitigation Grants Program provides an additional 15 percent beyond FEMA's total of Stafford Act grants in any Presidentially-declared disaster. In the case of Mississippi, this recently has provided hundreds of millions of dollars for risk reduction investments across the state. The money is available as a 75 percent grant for generally non-structural hazard mitigation, such as voluntary buyout and relocation or demolition of floodprone properties and dedication of related lands to permanent open space condition, and elevation and/or floodproofing of structures.

In addition, all FEMA flood insurance policies include an "Increased Cost of Construction" insurance rider that provides up to \$30,000 of coverage that can be used for post-flood building elevations or otherwise for bringing buildings up to current code and elevation standards. Funds paid out under this rider provide substantial funding that can be applied directly as the non-Federal match for hazard mitigation costs to elevate properties at least to the base flood elevation (1 percent chance annual flood). In fact, some properties in the Project Area have already utilized these programs successfully in recent years (see Mississippi Emergency Management Agency, Mississippi Comprehensive Hazard Mitigation Plan, Section 3.3 Risk Assessment, 2006, p. 10, 11, at <http://www.msema.org/mitigation/risk/3.3.swf> (last visited Jan. 19, 2008)).

It is especially important to note that at present, the State of Mississippi already has a very large amount of Hazard Mitigation Grant Funds available for hazard mitigation investments – currently amounting to **over \$413 million dollars**. Much of these funds were automatically made available in the wake of Hurricane Katrina, but also from subsequent Presidentially-declared natural disasters, including this year's flooding along the Mississippi River. These funds are available and can be used statewide for cost-effective hazard mitigation projects, including for projects such as property buyouts and removals, building elevations or relocations, or floodproofing of structures, and can be used at the discretion of the State of Mississippi working through the Office of the Governor and with local governments to mitigate any properties in the Mississippi Delta or elsewhere. Again, it is up to the State to utilize these funds in the locations where they set the state's hazard mitigation priorities.

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<sup>125</sup> P.L. 93 - 288, as amended, particularly through the "Public Assistance Program" and the "Section 404 Hazard Mitigation Grants Program", Section 1366 of the National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4011 et seq., known as the NFIP "Flood Mitigation Assistance Program".

<sup>126</sup> FEMA's "PDM program" was added to the Stafford Act (42 U.S.C. 5165) in 2000, enacted under section 104 of the Disaster Mitigation Act of 2000, (DMA 2000, as amended), at Public Law 106-390.

The fact that most communities in the Project Area are currently participating in the National Flood Insurance Program, already have maps identifying their flood hazards, have adopted land use requirements and building codes that require new construction and any substantial building improvements to be elevated to at least the base flood elevation (100-year flood level), and are already taking advantage of existing federal flood hazard mitigation programs, may help explain why there are relatively few repetitive loss properties and relative low flood insurance claims within the Project Area.

Again, while some have claimed the Yazoo Pumps are to provide urban flood protection, this is truly not the case, and the facts show these claims are greatly exaggerated. The Pumps are principally a wetlands and frequently-flooded, marginal farmlands drainage project. The lower Delta area above the Steele Bayou Control Structure is among the most sparsely populated areas in Mississippi. As we have noted, even while the Mississippi River is currently at flood stage and flooding is occurring elsewhere, practically no buildings have flooded in the lower Delta. In the all of Sharkey County there are currently only 130 flood insurance policies, with total claims over 30 years of \$964,000, and there are only 110 NFIP policies in Issaquena County with a total of \$3.8 million in claims, again, over 30 years. Essentially all of these are for properties outside the area that would be affected by the Yazoo Pumps.

We believe it makes no sense to spend \$220 million of taxpayers funds, plus millions more each year in the future on these Pumps, when so many other needs of the region, including education and schools, health, employment, public safety and other infrastructure needs, continue to be unmet. Other Federal and State programs are either already addressing or are readily available to address any virtually any residential or business flooding concerns, specifically without the Yazoo Backwater Pumps.

**(5) Existing Congressional Authorizations Cannot Limit The Evaluation of Reasonably Practicable Alternatives, And The Proposed Yazoo Pumps Plan Is Not Authorized**

As a matter of law, the assessment and evaluation of the existence of less damaging reasonably practicable alternatives may not be constrained by the existence of a Congressionally authorized plan. To the contrary, to comply with the Clean Water Act (and the National Environmental Policy Act), an evaluation of reasonably practicable alternatives must include a review of alternatives outside of the scope of the Corps' mission areas or outside of the scope of a Congressionally authorized project.

The Conservation Organizations would also note that the Corps has shown no reluctance to recommend a project that is not covered by the 1941 Yazoo Pumps authorization. Indeed, as discussed extensively in the Conservation Organizations Comments on the Corps' Draft and Final SEIS, the Corps' plan for the Yazoo Pumps greatly exceeds the 1941 authorization and it could not be constructed by the Corps unless it received new authorization from Congress.

EPA has also advised the Corps that the recommended plan is not authorized. EPA raised the lack of authorization in its Technical Review of the Draft SEIS (at page 22) and in a January 19, 2001 letter from the EPA Assistant Administrator of Water and the EPA Region IV Regional Administrator. The 2001 EPA letter advised the Corps that the Yazoo Pumps proposal exceeded the 1941 project authorization which “prohibits the draining of lands below the 90 foot elevation.” The 2001 EPA letter also noted that the prohibition had never been altered or removed and that the Corps’ recommended plan “proposes to drain lands well below the 90 foot elevation with significant adverse environmental impacts.”<sup>127</sup>

The Flood Control Act of 1941 authorized a plan to reduce backwater flooding in the Yazoo Backwater area by constructing a combination of drainage structures and pumping plants.<sup>128</sup> The authorized plan carefully defines the scope of the projects that can be built. Projects are explicitly limited to those that will “prevent the sump level from exceeding 90 feet, mean Gulf level, at average intervals of less than 5 years.”<sup>129</sup> Importantly, the 1941 authorization also explicitly states that lands below the 90 foot elevation are to be “dedicated to sump storage.”<sup>130</sup> Thus, under the existing authorization, waters below the 90 foot elevation may not be pumped or otherwise drained. These limitations have never been removed or altered.

The Corps has completely ignored this unambiguous limit to the scope of the operation of any pumping facility that may be built for the Yazoo Backwater Area.<sup>131</sup> The recommended plan unquestionably exceeds the scope of that authorization as, under that plan, the Yazoo Pumps will be turned on whenever water levels reach 87 feet NGVD.<sup>132</sup> *E.g.*, Main Report at 149.

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<sup>127</sup> A copy of this letter is attached at Tab G.

<sup>128</sup> Specifically, the 1941 Act states: “the extension of the authorized project and improvements contemplated in plan C of the report of March 7, 1941, of the Mississippi River Commission are authorized . . .” 33 U.S.C § 702a-12(b).

<sup>129</sup> H.R. Doc. No. 359, 77<sup>th</sup> Congress, 1<sup>st</sup> Session, at 40 (1941) (March 7, 1941 Report of the Mississippi River Commission, also referred to as the Review Report on the Project for Flood Control of the Mississippi River in its Alluvial Valley, dated 7 March 1941).

<sup>130</sup> *Id.* The directive that the “land below the 90-foot contour would therefore be dedicated to sump storage” applies to both Plans B and C.

<sup>131</sup> The Corps also has ignored its 41 year old conclusion that no pumps are needed to provide the authorized level of flood protection. As discussed above, in 1959, the Corps concluded that the authorized level of flood protection could be provided without pumps because the significant hydraulic changes had occurred as a result of improvements to the channel efficiency in the Mississippi River, and as a result of reservoirs and channel improvements in the Yazoo Basin headwater area. U.S. Army Corps of Engineers, Vicksburg District, Mississippi River and Tributaries Comprehensive Review Report, Annex L, Yazoo Backwater Project Mississippi at 20 (November 1959).

<sup>132</sup> The Corps has made it clear that it is not necessary to operate the Pumps at 87 feet to maintain the sump elevation at 90 feet. For example, in 1999, the Corps’ hydrologists advised the U.S. Fish and Wildlife Service that operation of the Pumps at the 88.5 foot elevation would maintain a two-year frequency wetlands event at 88.6 feet. Letter from Charles K. Baxter, Yazoo Backwater Team Leader, U.S. Fish and Wildlife Service to Douglas J. Kaimen, Planning, Programs, and Project Management Division, Vicksburg District, U.S. Army Corps of Engineers at 3 (December 15, 1999).

The Corps has also completely ignored the conclusions reached by the Corps' Chief of Engineers almost 50 years ago. In 1959, the Corps' Chief of Engineers advised Congress that the flood control structures then in place would allow the Corps to provide the level of flood protection authorized for the Yazoo Backwater Area by the Flood Control Act of 1941, without the need for a pumping plant (*i.e.*, without the Yazoo Pumps):

Since the original authorization for Yazoo Backwater Protection, important hydraulic changes have taken place due to improvement of channel efficiency in the Mississippi River and to reservoirs and channel improvement in the Yazoo Basin headwater area. These have resulted in less frequent flooding, and shorter duration of flooding, which makes it feasible to develop a simplification of the authorized plan by eliminating pumping at a large saving in project cost. . . . It is apparent that a protection plan for the Yazoo Backwater Area involving levees and floodgates only, which was not feasible under earlier conditions, is now feasible, and will provide a high degree of protection for the foreseeable future without the necessity of pumping.<sup>133</sup>

The FSEIS presents no evidence to suggest that the hydrology of the project area has changed so that the authorized level of flood protection is no longer being provided.

The FSEIS does make clear, however, that the Pumps could be turned on when water levels are even lower than the already unauthorized 87 feet. While the "nominal pump-on elevation" is 87.0 feet, NGVD, the Pumps will be operational to levels as low as 86.0 feet, NGVD. Main Report at 149. The final operation plan has not been developed yet, but will account for factors that include the fact that the diesel driven pumps cannot be instantaneously turned on nor simultaneously started, and the need to address forecasted flood and weather conditions. Each of these factors could require pumping at elevations below 87 feet NGVD. *Id.*

By draining lands below 90 feet, this unauthorized project will cause significantly more ecological harm than the Congressionally authorized project. The unauthorized draining of lands below 90 feet could also significantly distort the Corps' economic analysis.

Congress would need to authorize construction of the Yazoo Pumps plan recommended in the FSEIS before the Corps could legally construct the project.<sup>134</sup> Any such authorization would be subject to the standard cost share requirements imposed by Section 2213 of the Water Resources Development Act. 33 U.S.C. § 2213. The Conservation Organizations would strongly oppose

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<sup>133</sup> U.S. Army Corps of Engineers, Vicksburg District, Mississippi River and Tributaries Comprehensive Review Report, Annex L, Yazoo Backwater Project Mississippi at 20 (November 1959).

<sup>134</sup> The Corps also has not prepared a post-authorization change report for the recommended plan pursuant to the Corps' engineering regulations to attempt to address the authorization issue. *See* ER 1105-2-100, Appendix G, Section III.

any construction authorization for the recommended plan, and would strongly oppose any attempts to waive the local cost share requirement as part of any such new authorization.

**I. The Yazoo Pumps Project Could Disproportionately Impact Minority And Low Income Communities In The Project Area**

The 1994 Executive Order on Environmental Justice (Executive Order 12898) requires an analysis of the human health, economic and social effects of the Pumps, including the effects on minority communities and low-income communities, in order to help achieve the goal of environmental justice and to promote nondiscrimination in federal programs substantially affecting human health and the environment.

The Mississippi Delta suffers high rates of poverty, and the FSEIS states that just over 31 percent of the residents in Sharkey and Issaquena counties (located within the project area) live below the poverty level. Minority populations comprise almost 69 percent of the population in those same counties. Main Report at 92, FSEIS at SEIS-84

The Environmental Justice analysis prepared by the Corps is fundamentally flawed and cannot be relied on to properly evaluate whether the Yazoo Pumps would disproportionately impact minority and low income communities in the project area.

The Corps' analysis instead summarily concludes that only failure to move forward with the Yazoo Pumps would disproportionately affect these communities, while none of the alternatives evaluated by the FSEIS would have a disproportionate impact. The Corps analysis also contains no data or supporting information whatsoever to justify its conclusion that there is a significant flooding problem for communities in the region. It also contains no data or supporting information whatsoever to justify its conclusion that any such flooding would disproportionately affect low income and minority communities. For example, the analysis contains no data on the location of homes (and thus, their susceptibility to flooding) owned by low income or minority residents.

The following are some key issues that suggest that construction and operation of the Yazoo Pumps could have a disproportionate impact on the communities of concern.

First, many low-income and minority residents of the Delta rely on fish caught from local waterbodies as an important food source – and indeed, can be classified as subsistence fishers. Since the Department of the Interior comments on the FSEIS and the final Fish and Wildlife Coordination Act report make clear that the Yazoo Pumps will have a significant and

unacceptable adverse impact on fisheries in the project area, the Yazoo Pumps would likely have a disproportionate impact on subsistence fishers.<sup>135</sup>

Second, because the Yazoo Pumps are specifically designed to drain wetlands so that landowners can increase agricultural production on marginal lands that have always flooded, it is likely that the project will affect the use of agricultural chemicals. Increased agricultural use, whether through an extended cropping season, an increase in cropped acreage, the farming of drier soils, or the conversion of acres to corn could result in an increase in the use of agricultural chemicals. This in turn, could create disproportionate impacts on low-income and minority communities throughout the project area.

The Mississippi Delta (including the project area) is subject to pervasive use of agricultural chemicals, particularly pesticides. This persistent use of agriculture chemicals has caused significant impairment of local waterbodies. Of the river miles assessed in the Yazoo Basin, 78% are contaminated by pesticides, and 83% are contaminated by nutrients. Additionally, concentrations of DDT and toxaphene persist in the Delta at levels considerably higher than those found elsewhere in the nation.

On June 26, 2001, the Mississippi Department of Environmental Quality (MDEQ) issued a fish consumption advisory for all waters in the project area due to high residual levels of DDT and toxaphene. The MDEQ advisory recommended “consumption of no more than two meals per month of buffalo, carp and gar and to not eat more than two meals per month of catfish larger than 22 inches.”

Subsistence fishers in the Mississippi Delta eat far more than the amounts recommended by MDEQ.<sup>136</sup> As a result, it is essential that the Corps accurately assess whether the Yazoo Pumps could increase the agricultural chemical contamination of waterways in the project area and exacerbate an already severe threat to low income and minority residents. The FSEIS, however, has not done this.

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<sup>135</sup> Subsistence fishing in the Mississippi Delta has been examined by sociologists, and their findings should be evaluated by the FSEIS. Brown, Ralph B. and John F. Toth, Jr. 2001. Natural Resource Access and Interracial Associations: Black and White Subsistence Fishing in the Mississippi Delta, Southern Rural Sociology Vol. 12. pp. 81-110. A copy of this study has been submitted into the record for this veto hearing.

<sup>136</sup> White subsistence fishers in the Mississippi Delta typically eat over 100 pounds of fish a year, while African American subsistence fishers may eat fish two, three, or many more days a week. *Id.* at 88, 94-96.

**J. The Yazoo Pumps Are An Unwarranted Agricultural Drainage Project That Will Benefit Just A Few Large Landowners; The Yazoo Pumps Cannot Be Economically Justified**

The Yazoo Pumps are an unwarranted agricultural drainage project designed to benefit large landowners in the project area; the Pumps will not provide real flood protection to people in need. Indeed, the Yazoo Pumps are specifically designed to drain wetlands so that landowners can increase agricultural production on marginal lands that have always flooded. Some 80% of the project benefits are from agriculture.

As of 2002, there were only 192 farms in the project area with an average size of 2,913 acres. FSEIS Main Report at 24. The Corps does not provide any information on the elevation of these farms, so it is not possible to assess what percentage of the total farms in the project area might allegedly benefit from the Yazoo Pumps. The FSEIS also does not provide farm ownership information, so it is not possible to discern whether some landowners or corporations own multiple farms in the project area. However, the FSEIS does make it clear that farm ownership – and thus farm profits – have continued to consolidate over the past decade. In 1992, there were 234 farms in the project area that averaged 1,250 acres.<sup>137</sup>

The numerous fundamental failings in the Corps' economic analysis were laid out in detail in the Shabman Study (which was an independent and extensive economic review of the Yazoo Pumps),<sup>138</sup> the Shabman Comments on the Draft SEIS,<sup>139</sup> the Conservation Organizations' comments on the Draft SEIS, and agency comments on the Draft SEIS.

The Shabman Study and Shabman Comments on the Draft SEIS demonstrated that the Pumps are not economically justified, and that there are no circumstances under which they could become economically justified. The Shabman Study showed that the Yazoo Pumps would produce far less than 14 cents of agricultural benefits for each dollar spent on the project, and that the Corps overstated the agricultural benefits of the project by a shocking \$144 million. The Shabman study also showed that if the Pumps are constructed, the federal government will simply wind up paying more in farm subsidy payments, which will constitute virtually the entire very limited increase in farm profits.

The FSEIS contains additional areas where the project benefits have been overstated. Some of the more outrageous examples include:

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<sup>137</sup> This information was provided in the Draft SEIS at SEIS-43.

<sup>138</sup> Leonard Shabman & Laura Zepp, An Approach for Evaluating Nonstructural Actions with Application to the Yazoo River (Mississippi) Backwater Area (February 7, 2000) (prepared in cooperation with the U.S. Environmental Protection Agency, Region 4) (the "Shabman Study").

<sup>139</sup> Shabman and Zepp Review Comments on "Yazoo Backwater Reformulation" dated September 24, 2000 ("Shabman Review Comments").

- Flood damage reduction benefits – automobiles. The Corps claims that the average household in the project area has two automobiles valued at \$15,000 per car. The Corps says that despite the low velocity flooding typical in the study area that about 1/3 of these cars will get flood damages estimated at \$298,000 per year. These estimates make no sense given the economics in the project area. The average per capita income in Sharkey and Issaquena counties is \$11,187, and one third of the population lives below the poverty level. Median household income is approximately \$20,000 to \$22,000 depending on the county. Based on these economic realities, it is highly unlikely that each home would have two cars valued at \$15,000 sitting in the driveway, or that if this were the case, it is even more unlikely that they would not simply drive their cars to higher ground during the typical slow moving flood event.
- Flood damage reduction benefits – home values. The Corps bases its flood damage reduction benefits on inflated home values in the region, which in turn inflates flood damage reduction benefits for contents of homes (see below). The FSEIS asserts that the average residential home in the project area is valued at \$44,000 based on data collected by a local contractor from 2000-2005. FSEIS, Appendix 7 at 77. This contrasts considerably with data that the Corps supplied to Dr. Shabman and Laura Zepp in 2000. In 2000, the Corps identified residential one-story building average values at \$22,405. A recent review of property sales asking prices in a local newspaper within the project area correlates much more closely with the values reported by the Corps in 2000. Accuracy in the valuation of homes is particularly important in calculating flood damages in this case because the estimate of contents damage is correlated directly to property value.
- Flood damage reduction benefits – home contents. For one and two story homes in the project area, the Corps assumes that contents are equal to 100 percent of the home value, and for mobile homes the Corps assumes that contents are equal to 50 percent of the structure's value. Given the lower average income levels that exist in the project area counties, these assumptions seem to overstate potential damages, and fail to correlate with the recent experience of the National Flood Insurance Program.

The FSEIS also continues to underestimate the cost of the Yazoo Pumps in a number of significant ways, including the following:

- Construction costs – Pump construction. Given the significant increases in construction costs after Hurricane Katrina, the Corps appears to be significantly underestimating construction costs.
- Operations costs – fuel costs. The Corps appears to be underestimating the fuel costs for operating the Pumps. Diesel motors will be used to run the Pumps and according to the Corps, 286,000 gallons of diesel fuel will be needed each year. The FSEIS states that diesel fuel costs as of July 2006 are \$1.94 gallon for a cost of

approximately \$557,000 per year. However, off road diesel fuel prices on the future markets as of January 2007 were forecasted to be \$2.52 in 2007, \$3.18 in 2008, and \$2.99 in 2009. The Corps appears to have severely underestimated the actual diesel fuel costs.

- Mitigation costs. The Corps has drastically underestimated the amount of mitigation needed, and thus the cost of mitigation.

The economic analysis in the FSEIS contains significant analytical flaws, and cannot be relied on to justify this project. The Yazoo Pumps are not economically justified, and should never have been recommended for construction by the Corps.

**K. The Discharge Should Be Permanently Prohibited In A Manner That Ensures That Large-Scale Pumping Will Not Take Place**

The Conservation Organizations appreciate EPA's decision to broadly define the discharge prohibition. We believe that the catastrophic impacts of the Yazoo Pumps project combined with the almost seven decades of effort by project proponents to push the project through to construction, clearly warrants a discharge prohibition that permanently prohibits both the Yazoo Pumps and any variation on the Yazoo Pumps that would result in large-scale pumping within the Yazoo Backwater Area. We also believe that the prohibition must be broad enough to ensure that large-scale pumping in the Yazoo Backwater Area is not carried out through a series of smaller pumping plants that collectively would cause significant adverse impacts.

It is also essential that the discharge prohibition language ensure that no pumping plant (or series of plants) that would be used to drain the Yazoo Backwater Area could be constructed at any location. To this end, we are concerned that the current discharge prohibition language is limited to Issaquena County. It is our understanding that pumping of the Yazoo Backwater Area would be feasible through plants located in other Yazoo Backwater Area counties, including portions of those counties located outside the Yazoo Backwater Area. We also understand that a series of smaller-scale pumping plants working in combination could also produce unacceptable levels of damage.

To address our concerns and to make the discharge prohibition language more robust, the Conservation Organizations request that EPA give careful consideration to adopting the following suggested language:

“The Regional Administrator determines that the discharge of dredged or fill material in wetlands and other waters in Issaquena, Sharkey, Warren, or Yazoo Counties, Mississippi be prohibited for the purpose of constructing the Yazoo Backwater Area Project's pumping station or any other pumping proposal for the Yazoo Backwater Area (including a series of smaller pumping stations that would have the purpose or effect of draining

wetlands or altering the natural hydrologic regime of the Yazoo Backwater Area) that would involve significant adverse impacts on waters of the United States.”

## **L. Conclusion**

For the reasons set forth in these comments, the Conservation Organizations strongly support the proposed Clean Water Act § 404(c) veto of the Yazoo Pumps, and we urge EPA to complete the veto as quickly as possible.

Sincerely,

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Attachments